

February 1988

The National Locksmith®



Electronic Locking Products

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The National Locksmith • February 1988 • Volume 59, Number 2

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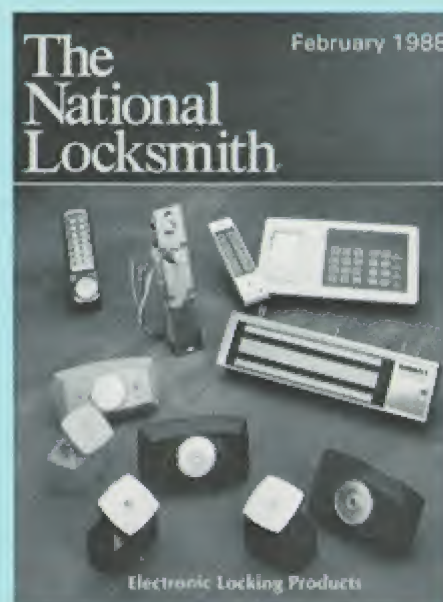
If you ever needed to know anything about installing these exit devices, Don O'Shall shall show you the way!

56 Antique Locks In France

Every country has old locks. But we found a particularly interesting antique lock museum in Paris.

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Here is a section where you can review a number of the products offered to the locksmith.



On The Cover

The following companies, listed in alphabetical order, have products featured on our front cover: Noblit Industries, Rixson-Firemark, Rofu International, Security Door Controls, Security Engineering.

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you wish to read*

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Commentary

Expand Your Horizons

What can we as locksmiths do to help secure our own future? After all, we have so many complaints about other people competing with us. Police and tow truck drivers open cars. Shoe repair shops cut keys. Hardware stores sell locks, sometimes for less than what we pay for them. What's a poor locksmith to do?

Fight back! There are several good ways you can expand your own business and take back some dollars that have been lost to other industries. I have never been in a shoe repair shop that cut high security keys. I have never seen a policeman repair a damaged linkage or take down a steering column. And I have never seen a hardware store offer masterkeying services. As a locksmith you have access to products and services that many other businesses do not.

You must use your unique talents and knowledge of the security field to fight back by offering choices to your customer that he can find no where else. Seek to expand the range of products that you offer. When you see that a customer would benefit from a simple access control system, make sure that you have the product and the training to do the job.

This month's issue is full of articles on electronic systems and products. Many of them will help you make more money in your job. In fact, many of the manufacturers offer training seminars and technical support. They want you to understand their products so you will buy and sell them. Take advantage of the opportunity you have this month. Request information with the Rapid Reply card from manufacturers about products that interest you.

The idea is to expand the range of products you are able to offer your customer. But often this requires you to expand your skills and training. The continued good health of locksmithing as an industry depends on you learning about basic access control and electronics. It depends on you obtaining the most training possible in other areas like masterkeying, safe work, and other areas where non-locksmiths fear to tread.

Have you given any thought to expanding your use of neuter bow key blanks? This seems to be a good way of making sure that the customer will return to a locksmith for duplication. Do you have a full range of foreign car key blanks on the shelf? You can't cut them if you don't

have them. Have you thought about the new key machines which allow you to cut high security keys? You'll have to decide for yourself if they make economic sense for your business. But they allow you to cut keys that almost nobody else can cut.

If you are a shop owner, help your employees obtain more training. This will make them more valuable to your business. And if you are an employee, you *must* take the initiative to improve yourself even if you have to pay for it yourself. Is this just a job? Ask yourself if being a locksmith is just your way of paying the rent? If you answered "yes," then you are never going to be a really good locksmith. You have to love what you do. And you have to want to *learn*. You can do that with books, classes, and through your associations.

The way to remain a healthy, profitable locksmith is to expand your horizons. Offer products and services that will make you stand out from the rest. Does the future look good for the locksmith? You bet! Especially for the *smart* locksmith.

The National Locksmith has published a new book called *MANIPULATION*, by Robert Sieveking. The book is an excellent method to learn this skill or to brush up.

The industry has lost another leader with the passing of Leonard Singer. As a young Editor he offered me his advice and support. We offer our sympathy to his family and friends.



Marc Goldberg
Editor/Publisher

February 5

Letters

Comments, Suggestions and Criticisms

The National Locksmith is interested in your views. We do reserve the right to edit for clarity and lengths. Please address your comments, praise, or criticism to: Editor, The National Locksmith, 698 Bonded Parkway, Streamwood, IL 60107.

Independent Businessman Struggles With Competition

I confronted the Clarksdale Police Department and asked them if they would discontinue opening cars. The reply from the police was that they would have to ask the mayor about this. A few days later I was contacted by the police department about the date I could start giving 24 hour service on lockouts. I told them Nov. 11, 1987. So on that date they stopped opening cars. Meanwhile, I ordered all the opening tools, books, etc. to be able to handle any car.

Well, the problem since the police have stopped opening cars is that everyone else has started. The car dealers have started opening cars for as low as \$10 so I had to drop my price to get any calls. I may get one at midnight or 3 a.m. when the dealers are closed. What can an independent businessman do to stop this? It is murdering my business.

Also, sometimes a customer will call an inexperienced person to open a car. Then that person breaks the linkage.

Then the customer calls a locksmith who doesn't know what had happened, and they try to stick the locksmith with the charges. What can I do?

Billy Durham
Mississippi

Editor's Note: The first thing you can do is not take on unprofitable calls. Get a fair price for your time, and if the customer calls someone else instead, so be it. The first thing you should ask over the phone is if anyone else has worked on the car. If so, inform the customer that damages may already be done and that you cannot be liable. Perhaps they should sign a release in this situation. Also, you should try and build up your business so that car opening is not the major source of your income. Use or develop your other skills that are not so easily copied by non-locksmiths.

Reader Objects To Nameless Opinion

This letter is in reference to a letter in the January, 1988 issue. It is my belief that any person who has an opinion valuable enough to be considered should be able to attach their name to that opinion.

In reference to HR 2777, New York and New Jersey have for years had a similar bill on the books. As a locksmith, I have not had to curtail my car

opening business; I have not gotten smaller; I have not stopped supporting ALOA; nor have there been any other ill effects to my business by complying with New York and New Jersey state laws. New York distributors still sell lockpicks and car opening tools legally in New York State and New Jersey.

If the particular gentleman figures out what his name is, he would be welcome to call me, I would be happy to discuss this with him, and I am sure that Jon Payne, as Chairman of the ALOA Legislative Committee, would welcome the opportunity to hear his opinion, if they were strong enough to sign his name to.

Henry Printz
New Jersey

Editor's Note: Letters to the Editor must be signed. However, we will withhold a name upon request. Your best bet would have been to respond to the letter writer's opinions instead of focusing on his name.

Request For Classes In Puerto Rico

Professional locksmithing requires up-to-date technical knowledge. I think and I expect that certain courses, particular classes or seminars should be held or given in Puerto Rico covering

Continued on page 74



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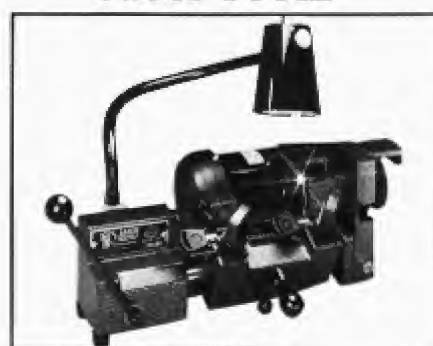
The Free Flo



Second Prize

Designed to cut Medeco® and Emhart® keys. Duplicates a Medeco® key very quickly and accurately. Will also cut regular cylinder keys. By Fulton Lock.

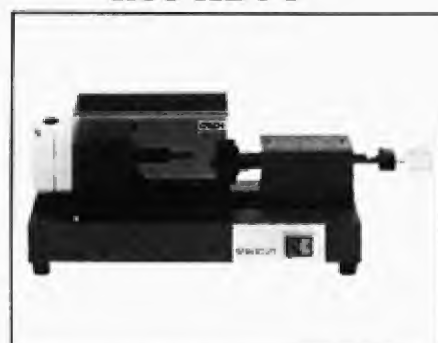
Saber Tooth



Third Prize

A fast semi-automatic duplicator featuring carbide cutter, full 1/3 hp motor, 2400 rpm. Working lamp and deburring brush are standard. From The Locksmith Store.

Ilco KD94



Fourth Prize

Cuts the 1137 tubular key, brass or steel accurately and quickly. Features include large chuck to hold standard size key heads, easily adjustable.

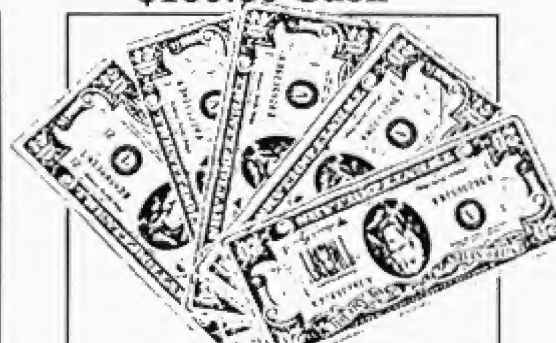
9150 Speedex



Fifth Prize

The Speedex has been transformed from the old stand-by to the machine for today's needs. Features double sided jaws. From HPC.

\$100.00 Cash



Sixth Prize

Everyone can use a few extra dollars! This prize will brighten your day...and fatten your wallet.

Contest Rules

All you need to do to enter is submit a tip, covering any aspect of locksmithing to *The National Locksmith*. Certainly, you have a favorite way of doing things that you'd like to share with other locksmiths. Why not write it down and submit it to: Steve Spiwak, Technitips' Editor, *The National Locksmith*, 698 Bonded Parkway, Streamwood, IL 60107.

Tips submitted to other industry publications will **not be eligible!** So get busy and send in your tips today! You may win cash, merchandise, or even one of several key machines! At the end of the year, we choose the winners of the above prizes.

Last year dozens of people walked off with money and prizes. Wouldn't you like to be one of the prize winners for 1987? Enter today! It's a lot easier than you think!

Every Tip Wins 'Locksmith Bucks!'

Yes, every tip published wins a prize. But remember, you must submit your tip to *The National Locksmith* exclusively. Each and every tip published in Technitips wins you \$20.00 in Locksmith Bucks! Use this spendable cash toward the purchase of any books or merchandise from *The National Locksmith*. You also receive a Bonded Locksmith bumper sticker, decal and patch. Plus you are now eligible for the really big prizes!

Best Tip of the month prizes!

If your tip is chosen as the best tip of the month, you will win \$50.00 in cash as well as \$30.00 in Locksmith Bucks! Plus you will receive a quartz Locksmith watch, a Bonded Locksmith bumper sticker, decal, patch and a Locksmith Cap. Plus, you may win one of the great prizes pictured above.

Technitips

Helpful Hints from Fellow Locksmiths



Send me your Technitips. Who knows, you may be our next winner! c/o The National Locksmith, 698 Bonded Parkway, Streamwood, IL 60107.

by Steve Spiwak

February's Best Tip

My method for generating a key for the new 10 cut Ford ignition is by using try-out keys to remove the switch and then decode the tumblers, I really don't like drilling out the side bar and replacing the ignition. It's messy and you have to carry several styles and finishes.

However, there are times when the try-out keys just won't turn the ignition switch to the on position so that it can be removed. That's when I use the following procedure:

The first step is to remove the tumbler springs through the keyway of the ignition switch. You will have to fabricate a tool to do this. (See illustration 1.) It can be made from a



Illustration 1

paperclip, piano wire, or most preferably a steel pick, but most important, the hook at the tip must be fine enough to grasp the spring and pull it out the keyway. You may have to use needlenose pliers to completely remove the unraveled spring.

Once you have your tool made, look down the keyway. The springs can be seen better if you lift the buzzer switch out of the way. Start with the front tumbler spring. (See illustration 2.) Once it is removed,

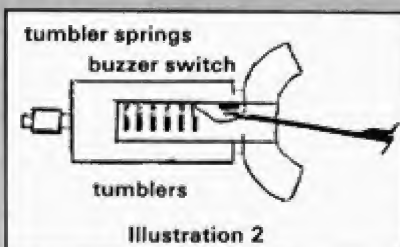


Illustration 2

go for the next spring either through the hole in the first tumbler or by lifting the first tumbler out of the way. It takes a little patience, but all six springs can be removed in just a few minutes.

Once all the springs have been removed, take a straight pick and pull all the tumblers down to the fully extended position. This is done best by threading the pick through

the space where the springs were resting on the tumblers.

When the tumblers are in this position rapidly tap the ears of the ignition switch with a small hammer or screwdriver handle. At the same time put a slight back and forth turning motion on the switch by using a screwdriver down the keyway. What you are doing is bumping the tumblers into the correct position so that the side bar can drop into alignment.

Once the ignition is in the on position, depress the retainer and remove it from the steering column. Continue rotating the switch until the plug comes out of the case. Remove the side bar to decode the cuts of the key. Remove the spring retainer and replace springs with GM springs or with the springs that came in the re-keying kit now available from All Lock. Re-assemble and install it back into column.

This procedure sounds a bit complicated, but is quite fast once you have done one.

David Parsons
Utah



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This Technitip refers to the question regarding key blanks for the garage rim cylinders. We also have these cylinders in our area. The face of the cylinder is stamped PYCM followed by a number, such as: 1, 2, 3 etc. Sometimes EA27, X1014F will fit, but not always. We have acquired a cylinder and found that you can use a Star 5SA8, Ilco 1007K, if you file the blade down a few strokes on both sides. We have been using this procedure for quite a while now with absolutely no problems.

Peter Sarailian
New Jersey

This tip concerns late model Jaguars with the push-up trunk release. If the trunk cylinder is destroyed, jammed, the keys are lost, or for whatever reason you have to open the trunk, I have found an interesting method for opening it.

If the license plate is removed you will see four holes; two for the license plate bolts and two with rubber plugs. If you look into the upper right hole with a small light, you will see the release rod going down to the latch mechanism. Just insert a flat piece of

steel into the hole, contact the release rod and push up. The lid will open. If you look into the lower hole you will see the latch mechanism. If you need to open it using the latch, follow the same procedure by pushing up on the release rod where it attaches to the latch. The code is stamped on the body of the lock near the right mounting bolt. There are no letters with the code. Check to see which blank goes in to determine the code series.

Stewart Levine
New Jersey

This Technitip concerns the locksmith that does not have the S-10 or S-15 opening tool. One evening I was called out on a lockout about 9:30 p.m. This was a 1988 GMC pickup truck, S-15. I did not have my tool with me, it was in my shop.

I used my wedge and a flex light to find the horizontal locking rod. I could not see it, so I looked around for another way to enter. I found out that by taking the three star torx screw out that holds the mirror on, there is a hole under the mirror about 1 1/4 inches square. The lock has a closed casing

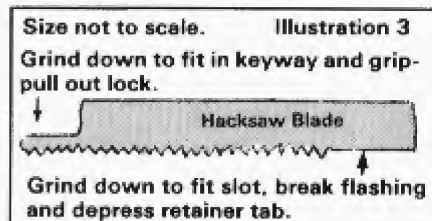
around it and is about six to eight inches from this hole under the mirror. This lock has a casing around it. Also the casing has a large enough hole in it, so you can get a piece of wire or a clothes hanger with a hook on it and go through and get a hold of the locking rod and pull to the front of truck. The lock will unlock the door.

I was called out on another one and this was a 1988 Chevrolet Blazer S-10 and this has the same feature.

Harry Rinch
Delaware

Here is a tool I find very useful when extracting a stubborn GM ignition lock with the retainer tab. (See illustration 3.)

Paul Findley
Iowa





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In response to R. Lazich's tip on cam locks for gas cap doors (December 1987 issue of *The National Locksmith*), how about using an exterior postal box lock? It has a dust cover so the glueing of a rubber cap is eliminated. The cost is about the same. National makes one and several other manufacturers do also.

Harold Wager
Florida

This tip concerns the screws on the back of mortise type cylinders. I've noticed when tightening them after a few times, they round out quickly becoming stripped at the head. Try 3-48 socket head screws 3/16" long to replace them. Be sure that whatever lock you are using them in has clearance behind the lock so as not to interfere (i.e. Adams Rite lock, Lori deadbolts, etc.)

Also, grind the heads flat and the next person to rekey the cylinder will greatly appreciate it and won't forget you.

A & B Lock Service
Illinois

This tip refers to custom steering wheels. Many area residents enjoy customizing their pick-ups, usually Chevy or GMC. I've seen several different steering wheels without tapped holes for a steering wheel puller. For these wheels I carry a three-legged gear/fly-wheel puller, the legs of which hook under the base of the steering wheel. It works every time!

While on the subject of pulling steering wheels, be sure to carry a couple of 3" x 1/4" x SAE bolts in your tool box. Some International Harvester vehicles from the 70's are tapped for 1/4" x SAE instead of the usual 5/16" x STD.

Al Flocke
Texas

Recently our local Ford dealership called upon me to replace the face cap on a 1985 Mercury Cougar. This car has the disc-tumbler door/ignition locks and one door lock had a face cap damaged in an accident. As you know, replacement face caps are not available for Ford and the dealership wanted to avoid replacing the keyed-alike set of locks.

My solution for them was to peel the face cap off and reduce the lock-face

diameter using a grinding wheel. Be careful—it doesn't take much grinding. Then I installed an AMC face cap and now the lock works great and looks like new.

Emerit Thompson, Jr.
Minnesota

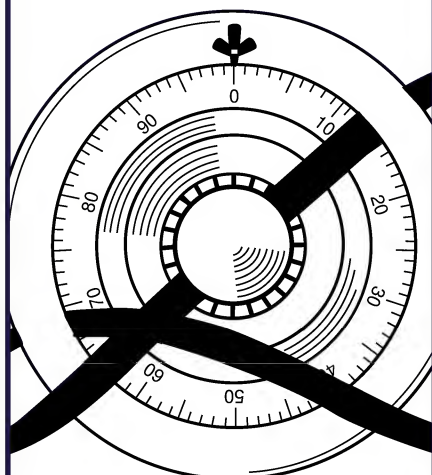
Editor's Note: You only need to remove a minimal amount (about .02"). The reason this works is that the AMC cap is centered perfectly allowing for easy entry and removal of the key.

Here are a few tips that are fairly basic. However, we feel they are of some interest:

The following is a good basic automotive tip.

I have an easy way to remove the ignition lock on a Ford product when the key doesn't work. Using the replacement lock as a sample, drill alongside the lock (first remove the chrome bezel) stopping under the pin that holds the lock in. Tape the 3/16" with masking tape to prevent drilling too far. This process gives the retaining pin room to be punched back.

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Second, drill $\frac{3}{8}$ " hole as close to the center of the lock as possible and stop when the drill contacts the tailpiece. (See illustration 4.) Remove the lock

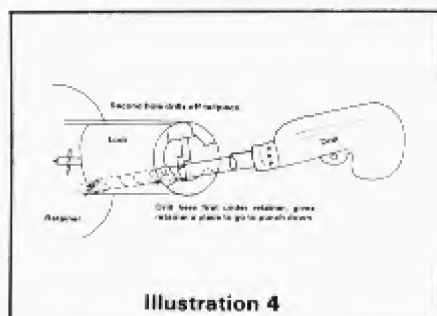


Illustration 4

and using needle-nose pliers turn the broken off tailpiece to run and remove. I use a cordless vacuum during the extraction to minimize filings going all over and loading up the steering column and floor.

R. Lazich
Wisconsin

I have a tip for those of you who stamp your keyblanks with letters, numbers and/or your shop name to help silence the hammer contact.

First of all, I suggest you use a block of scrap iron that has been polished smooth and clean. I use one that measures 4" x 10" and is 1" thick. I find this gives me a sufficient amount of surface for mass-stamping.

The real silencer is Sofstops by Weiser Lock. Just stick several of these underneath your stamping block to absorb the shock. After listening to key machines and the like all day long, I am sure you will agree that, "Silence is Golden!"

Emerit Thompson, Jr.
Minnesota

This Technitip primarily concerns the cold weather regions. I recently purchased an "air bag" that is used to jack up a service van in about 20 seconds. The air bag is inflated by using the fumes generated through the exhaust system of the vehicle. The specific unit to which I refer has a 12 foot flexible hose.

A couple of days ago we had a violent ice and rain storm. Not only were locks frozen, but the linkage as well. I took out the air bag hose, put a wedge between the door and window and directed the (hot) exhaust from my van down into the door interior. In less than a minute everything was defrosted. This device will also defrost your windshield and wipers, etc.

If you do not have an air bag, use a rubber funnel to go over the exhaust. You can purchase a vacuum hose or any flexible hose at a hardware store. Simply, tape the hose to the funnel, and you are in business. This beats hair dryers or similar devices, since there is no need for electricity.

William Medary, Jr.
Maine

I still use my Foley Belsaw model #200 key machine. The only problem was where to keep all the other attachments. There was plenty of extra room on the right hand side of the machine next to the micrometer.

I drilled 6 holes: one each $\frac{1}{8}$ " for the first adjustment allen wrench; one each $\frac{15}{16}$ " for the large adjustment wrench; one each $\frac{9}{16}$ " for the code micrometer wrench if you use it; two each $\frac{11}{16}$ " holes for the key guides, one of which you insert through your adjustment keys and then through the

Continued on page 74

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Newsmakers

New Products and Industry News

Rofu Offers Keymax™ Keyless Access Control

Rofu International Corporation has the family of Keymax™ keyless access control systems available for immediate delivery. Each system consists of three main components: the controller, and interface and a touch pad.

The controller is easy to program and can store in its memory, depending on model selected, 72, 160 or 320 user codes and records. A built-in battery back-up system is an available option on certain models and it retains codes and records for up to 720 hours.

Desktop and wall mount versions in plastic or steel case housings are offered. Depending on reporting requirements of the user, four different software versions are available.

When the printer option is selected a tape can be made of system use for file purposes. Door use records, user codes and (with certain software versions) alarms can also be recalled via the LED display.

The touch pad has 10 digital and two function keys as well as a bi-colored LED to indicate status and is available in a silver or brown colored housing. After three consecutive bad user codes are entered, the system will automatically issue a tamper alarm. The user can also issue a distress alarm from the touch pad.

Circle 212 on Rapid Reply

Valli & Colombo Markets Items For The Handicapped

The first designer-line of door and window handles especially developed for the handicapped, are now being introduced in the U.S. by Valli & Colombo (USA, Duarte, Calif.), subsidiary of Valli & Colombo (Renate, Italy).

The "Designs in Progress" (Desipro) series combines aesthetics in design with functional need, and is intended to help the disabled to operate door and window handles independently, despite their hand grip dysfunctions.

The door handles are designed with a basic shape for disabled people, with variations for dystonic, spastic and ataxic hand dysfunctions, and are the first components of the Desipro program carried out by Valli & Colombo.



Circle 213 on Rapid Reply

The National Locksmith Offers Manipulation Book

The National Locksmith magazine has introduced a new book called *Manipulation*. This spiral bound volume contains over 150 pages of text, illustrations, and charts. The book is authored by expert Bob Sieveking. In *Manipulation* he takes the locksmith from an introduction to manipulation all the way through to advanced techniques.

The new book is actually a course on the subject of manipulation which is the technique of dialing open safes without drilling. Each chapter presents learning goals and tells you exactly what you will be learning in the chapter. Then, at the chapter's end, you are presented with study questions so you can be sure that you have understood the material.

You can even check your answers in the section of the book where all the questions are properly answered. If you have made any mistakes, the study guide section tells you which pages to review. This thorough book allows you to learn to manipulate combination locks at your own pace, in the privacy of your own home.

Dozens of illustrations and charts help simplify the information. *Manipulation*, priced at \$85, teaches you everything you need to know.

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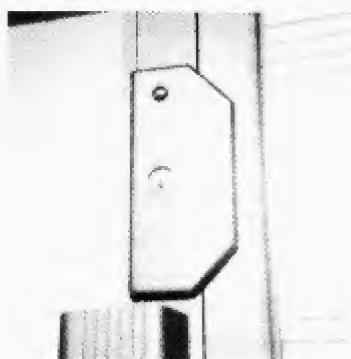
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and control.

Metal Building Technologies New Lock Guard Plate

MBT is pleased to introduce their new lock guard. It is useful for all store fronts that have aluminum glass doors. The guard protects the lock on the surface and also protects the deadbolt going into the jamb.

The lock guard plate is very easy to install. You line it up, mark two holes, drill one hole all the way through and one only on the outside surface of the door frame. One long bolt goes all the way with a lock nut, and the other hole takes the drive pin rivet. All hardware is included for installation and colors are black and aluminum/gray for mill finish doors.



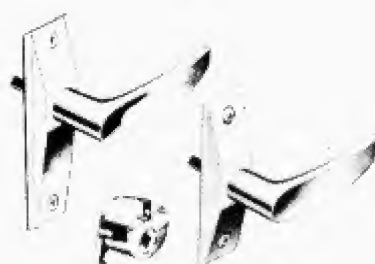
Circle 216 on Rapid Reply

TACO Introduces Replacement Lever Handles

TACO, the Trans-Atlantic Company, who has supplied the storefront trade since 1954, has introduced an inexpensive replacement line of lever handles for use with narrow style deadlatches. This handle allows for a professional replacement job, covering all old mounting holes.

It features a cylinder type cam plug which mates with any deadlatch to form a solid unit. Handing is reversible to match the hand of the door and provide a natural downward handle movement to retract the latch bolt.

The lever handle is available in aluminum and duronodic finishes.



Circle 217 on Rapid Reply

Kett Tool Company Revises Catalog

The Kett Tool Company has recently revised their full line catalog of electric and pneumatic power tools. This ten-page, full color catalog details the entire Kett family of portable power saws, shears, nibblers, kits and accessories. New products including the 1020 Nibbler Attachment, PN-1000 Pneumatic Nibbler, PS-523 Pneumatic Panel Cutting Saw, 16-gauge Shears, Straight Handle Pneumatics and more are featured.



Circle 218 on Rapid Reply

NATIONAL

AUTO LOCK SERVICE, INC.

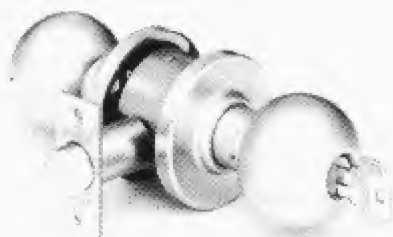
National Auto Lock Service, Inc. offers a wide range of equipment and services for the Automotive Locksmith. From tools and hard to find key blanks to transponder programming, we can take the mystery out of car service. We accept credit card orders, and can ship COD. Contact us for the latest in automotive technology.

www.laserkey.com

Dexter Expands Potential With New DC-Keyway

Dexter, a subsidiary of Master Lock, now offers doorlocks equipped with a new "DC" keyway, fully key-compatible with Schlage, Baldwin and other C-type keyway installations. They assure deliveries in five weeks, thus solving the problem of backorders and slow delivery.

Locksets with the Dexter "DC" keyway also offer price advantages and are backed by a full lifetime warranty. Selections include Duralock grade-2 cylindrical locksets (UL 3-hour fire door certified); entrance handles sets; 4100, 4200, and 4300-series deadbolts; Lifebolt interconnecting locksets; and mortise and rim cylinders.



Circle 223 on Rapid Reply

Lori Adds Entrance Handleset To Line

Lori Lock has just introduced a new, contemporary handleset design to its line of solid brass decorative hardware. With distinctive pitcher and colonial designs already marketed by Lori, this new contemporary entrance set increases Lori's appeal in residential condominium, retail and designer office applications.

All of Lori's decorative hardware is made in America, produced from solid forged brass, and is ideal for both new construction and retrofit applications. Simple installation highlights every entrance set—they fit a standard door preparation for cylindrical locks with only three major components to the handleset.

The modern, clean look of this new Lori design is now available in most



popular architectural finishes and 20 keyways, including KABA high security. All Lori entrance handlesets are available in both 2 3/8" and 2 3/4" backsets. Interior sets are also available with inside trim matched in several choices of solid forged brass levers and knobs. Special features include a heavy duty patented deadlock with a 1" throw, hardened steel rods in the bolt, interlocking bolt and housing and a heavy duty strike.

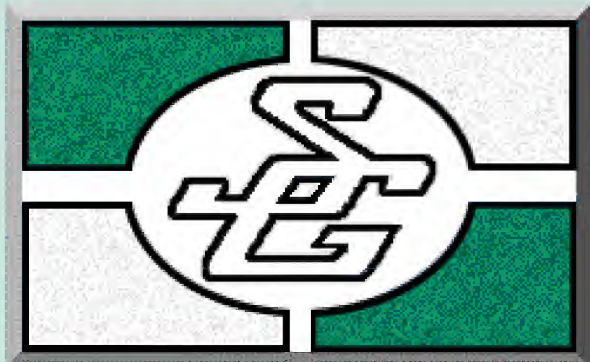
Circle 224 on Rapid Reply

High Tech's 1988 Automotive Lockout Kit

High Tech Tools now has a new 1988 version of its automotive lockout kit. This new model 1600 set is guaranteed to open all 1988 G.M. cars including the new G.M. W body. The set also unlocks all Fords, and Chryslers.

For the first time even specialty cars like the Porsche, Mercedes, Jaguar, Ferrari Volvo, and Peugeot can be opened. The kit also opens most other foreign cars like Toyotas, Nissans, Hyundai, Honda, and many more. This set is a most complete automotive lockout kit.

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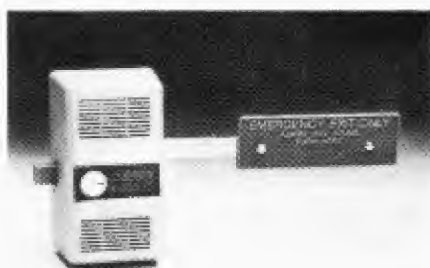
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Detex Offers Updated Exit Control Lock

Detex Corporation introduces its new ECL-230C model Exit Control Lock, an update to the 25-year industry standard ECL-230. The new ECL-230C has a streamlined look that capitalizes on rounded edges and painted cast housing. The new lock will also have features that make it easier to install and service.

The new ECL-230C provides the same functionality as the previous model: protecting emergency doors from outside entry, allowing emergency exit from the inside, sounding a high decibel alarm for unauthorized use. Additionally, the materials and design in the new lock provide for even greater levels of security.



The new housing is molded of durable, rust-resistant cast aluminum and features a new locking integrity. The housing swings away from the door assembly easily so the lock body and the mechanism that drives the bolt can be serviced easily, without having to remove the assembly from the door.

Its backplate functions as a template for both mounting the lock and for setting the distance from bolt keeper and strike. The lock can be mounted on double doors and achieves a symmetrical appearance.

Circle 226 on Rapid Reply

Continental Instruments Has Free Training Seminars

Though they've been conducted regularly throughout the past five years, Continental Instruments Corporation's free technical training seminars on Access Control remain one of the industry's most securely kept secrets. The seminars not only help dealers earn substantial profits in the near future, former attendees report the seminars to be exceptional.

Continental saw an information void in the marketplace and in the need

to explain the history and development of the access control industry, to compare and evaluate the various approaches to card encoding techniques or even to define basic "buzz" words bantered around in the trade. Their solution was to offer free training sessions.

The seminars have been so successful that Continental has recently renovated and expanded their formal classroom which is equipped with individual sets of systems which allow for hands-on participation.



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Installing An Electromagnetic Lock

"In this article we will present an overview of electromagnetic locks, explain a few of the terms, and make a basic installation of an electronic security device."



Send your lock and key questions to Jack Roberts, The National Locksmith, 698 Bonded Parkway, Streamwood, IL 60107.

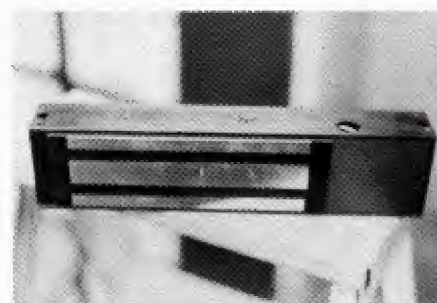
by Jack Roberts

A recent visitor to our shop, an air force electronics technician, after observing the various aspects of a couple of hours of our shop activities, asked the question, "How long does it take to become proficient in your profession?" I answered, "I really don't know, I have been trying for nearly 20 years and just when I think that I'm

almost there some new thing pops up and I am back to square one."

There are, of course, many readers who will not agree with my thinking and who feel that their level or degree of proficiency has peaked and that they know all that there is to know. I have long held to the theory that "What you learn after you know it all is what really counts."

In this article we will present an overview of electromagnetic locks, (see illustration 1) explain a few of the many new terms which are to be encountered and make a very basic and simple installation of an electronic security device. The demands of remote controlled security introduced two new



1. Electromagnetic lock.

terms, "Fail-Safe and Fail-Secure," which seem confusing but actually define very clearly the action of the device in the event of electrical power failure. Fail-Safe means exactly what it says; in the event of a power failure, the



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occupants of the building can safely exit the building because the bolt, latch or holding device will automatically release permitting immediate egress.

In like manner, Fail-Secure means exactly what it says, in the event of a power failure the bolt or latch of a Fail-Secure device will be automatically released and the door secured preventing ingress or egress. An analogy would liken Fail-Safe to a panic device and Fail-Secure to a deadbolt although certainly they are not the same.

Switching circuitry must be learned and although most of us are familiar with the "momentary contact" key lock switch which is common to garage door controls, and the "maintained contact" key lock switch, which is used with alarm systems, our knowledge of switching circuitry must extend to a complete understanding of the various means of switch control.

"Actuator" is the term applied to the mechanism which operates the contacts of the switch and can be a key, a button, a lever, etc. "Circuit" is the contact arrangement when the actuator and the contacts are in their normal positions. "Make" means to close or establish an electrical circuit, whereas "break" means to open an electrical



2. Armature attached to door with wiring pulled through and mounting plate attached.

circuit. "N.O." denotes a switch with "normally open" contacts which means that the actuator must be operated to "close" the contacts and "make" the circuit. "N.C." is just the opposite and means "normally closed." The actuator of this switch must be moved from its natural position to "open" the contacts and "break" the circuit. Switching circuitries will also involve the "Single-Pole Single-Throw" (SPST) switch which has one moving and one stationary contact. Movement of the actuator provides a positive "open or closed" position to make or break the electrical circuit.

A wall switch in your home is an

example of a "SPST" switch. The "Single-Pole Double-Throw" (SPDT) type of switch is used to "make" or "break" a circuit depending on how it may be wired. An example of SPDT circuitry is the switches located at the top and bottom of a staircase which are wired so that either switch will turn the hall light on or off. The action of the actuator of either switch negates the action of the other. "Double-Pole Double Throw" (DPDT) switches are those which make and break two separate circuits and provide a normally open (NO) and normally closed (NC) contact for each pole. This is often confused with the "Two Circuit" switch which, with the actuator in one position moving contacts make one circuit, and with the actuator in the opposite position makes another separate circuit.

One or more of these various switches forms the circuitry for the operation of one or more electronic security devices and it is essential that we have a thorough understanding of each of them before undertaking any installation. While the traditional thinking of door security has been that a bolt or latch must project from the door to the frame or from the frame to



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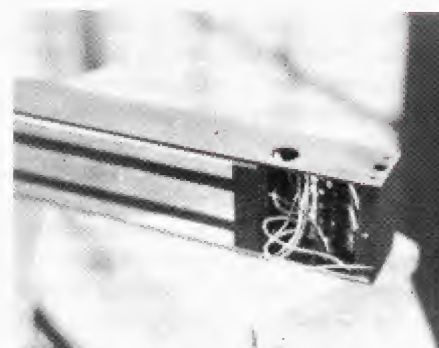
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the door with some mechanical means of retraction, the next step in high lock technology appears to be the elimination of the bolt or latch entirely.

This has been accomplished by the development of the "Electromagnetic" lock which has no moving parts, is absolutely "Fail-Safe" easy to install and maintenance free. Essentially there are only two parts of an electromagnetic lock; the lock body which contains the magnet and mounts on the header or the jamb and the armature which mounts on the door. The holding power of a single electromagnetic lock can be as high as 1500 pounds of direct pull force which of course, can be

installed on inswinging, outswinging or sliding, single or double, metal, wood, aluminum or herculite doors and can be controlled, by switching circuitry, with various types of access systems either locally or remotely.

The installation is simple enough, the armature is attached to the door. The required wiring is pulled and the lock mounting plate attached to the frame (see photograph 2). The wiring access cover of the lock is removed, (see photograph 3) the necessary connections made and the lock is attached to the mounting plate. Power is applied and "bingo" the door is locked. (See photograph 4.)



3. Lock with wiring access cover removed.



4. Door shown locked.



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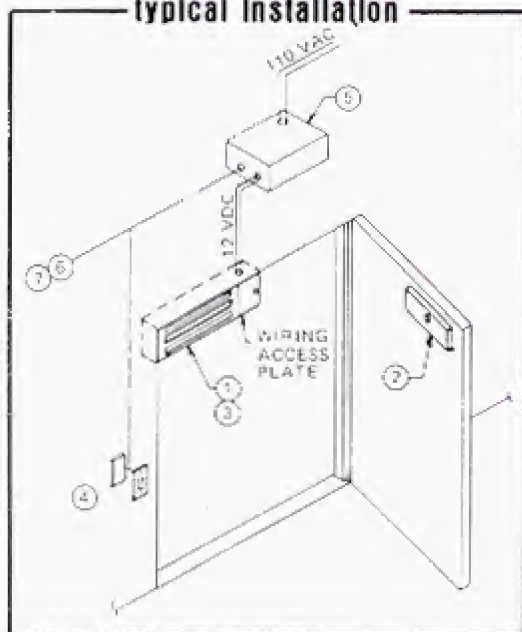
This sounds very simple and it is! Accurate measurements for the lock and armature are not all that critical. "Eyeball alignment" is usually adequate for a neat installation. No mortising or strike alignment is required and the problem of door sag or warpage, which can bind a bolt or latch, is eliminated. (Mortising is usually required for sliding doors and may be utilized for swinging doors.) Installing the lock is the easy part and requires only a few minutes for the actual installation. The hard part comes with the planning and installation of the wiring and switching circuitry which must be carefully planned and executed.

All 110v circuits that will be involved should be clearly marked at the main power panel before wiring is attempted on transformers or other power supplies. The location and type of switches must be determined and all wiring must be completed before testing of the circuitry.

Electromagnetic locks may have, as standard or optional features: guard plates (which cover the shear line of the lock and the armature), automatic relock, monitoring sensors, relocking time delay (usually field adjustable to a low or high range depending on the size of the unit), tamper switch and delayed

Illustration 5

typical installation



- | | |
|-------------------------------------|---------------------------------------|
| 1. Model #3900
Electric Lock | 5. Power Supply |
| 2. Electric Lock Armature | 6. Remote On/Off
Station Controls* |
| 3. Door Status Switch
Optional* | 7. Hazard Sensing
Safety Devices* |
| 4. Local On/Off
Station Controls | |

*As System Requires

egress. A typical single door installation with one lock mounted to the header is shown in illustration five. A single door installation with two locks mounted on the frame is also possible. This, of course, doubles the holding power applied to the door. Another option is a double door installation, using one lock and two armatures (one on each door). With a 1500 pound lock, the holding power of each door would be reduced to 750 pounds for each door. Also a double door installation using two locks is possible. Architectural housings are available for full width top jamb or full height side jamb installations. Special armatures are necessary for inswinging doors and for Hercule doors.

Since we often encounter a problem between fire codes and management security requirements, the electromagnetic lock can very well be the best of two worlds. Fire inspectors are enthusiastic about them due to the fact that any interruption of power, from power failure to the various switching circuitry that can be utilized, allows for

immediate egress. Management can control unauthorized egress from selected areas by means of the switching circuitry installed, and there is no bulky surface mounted hardware, such as a day alarm, on the face of the door. Day alarm units can easily be knocked off the door by fork lift drivers, and only provide notice of unauthorized egress when the alarm sounds and the thief, (if indeed a theft has been committed) is gone.

In an emergency an electromagnetic lock can be released by an emergency switch installed adjacent to the door.

This switch can be fitted with a delayed time release (usually fifteen seconds) which can also sound an alarm that the lock power has been interrupted.

Although electromagnetic locks and their associated switching circuitry are more expensive than conventional locking systems, the additional cost can often be justified by the additional security and safety standards which may be achieved. Take the next step in "high lock technology." Study and learn electronic control and apply that knowledge to acquire higher earning profits for your own shop. ■



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Security Engineering's Model 3940

"After a redevelopment program of six months, an improved more versatile unit was made available. The alteration made the lock compatible with *any* exit hardware."

by John Schum

In 1985 Security Engineering, Inc. provided the Electronic Security Hardware marketplace with the first electromagnetic lock designed with a built-in access control device. The model 3940 "Intel" lock combined the proven locking characteristics of a standard electromagnetic lock with an ultrasonic exit release sensor.

The original concept provided a "one motion" egress system, contained within the lock housing, eliminating special exit devices and additional field wiring. The lock was designed to work with most standard exit hardware with very little field adjustment.

As time went on the interest in this unique product grew. Demand for its use with non-standard exit hardware, and for additional electronic features, prompted Security Engineering to initiate a study for redesign of this unit.

In October of 1987, after an intensive six month redevelopment program, an improved more versatile unit was made available. The lock model number remained the same, as did the most physical features of the locking device. The primary difference was that the improved electronics now allowed the lock to be compatible with *any* exit hardware *without* any field adjustment.

The primary means of detection is a fan-shaped ultrasonic curtain directed downward from the bottom of the lock housing. It spans two-thirds of the door at exit hardware height and stops approximately twenty inches from floor level.

The newer unit added an optional feature; a Secondary Passive Infrared (PIR) curtain of detection that may be added for extra security when conditions permit.

These sensors, when an attempt to exit is made, release the lock immediately. This allows compatibility with the Life Safety Code theory of "one motion" egress, without special knowl-

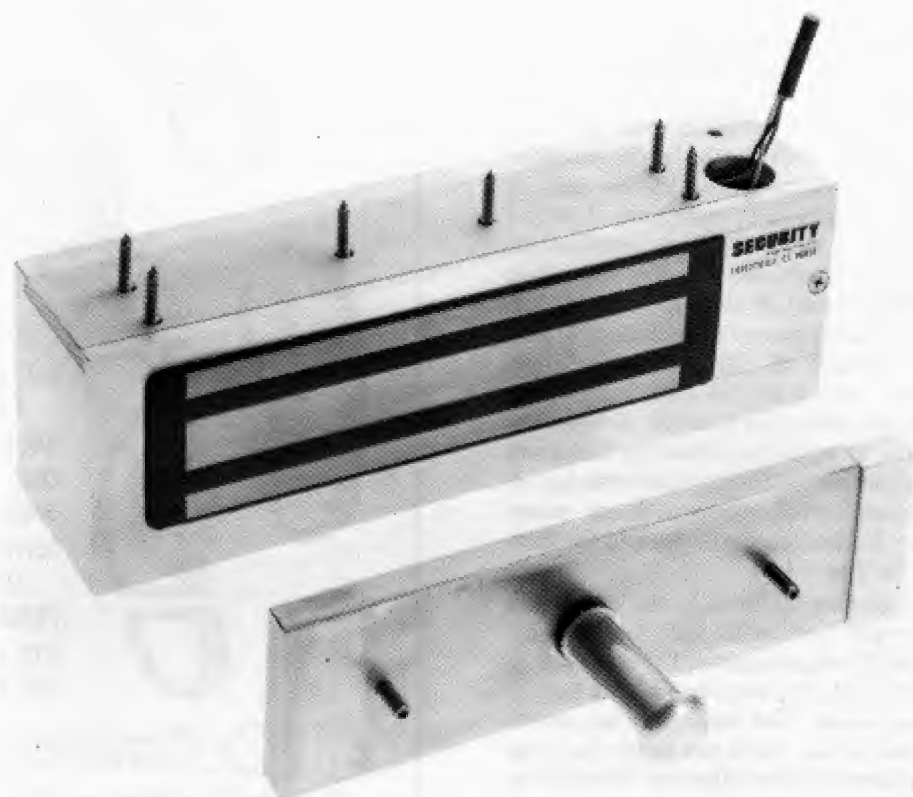
edge or effort for operation. In an emergency the lock will automatically release, when interfaced with an approved fire control panel, regardless of any side pressure applied to the door.

The lock itself needs only input voltage (two conductor wire run) to operate, and will accept a wide range of low voltages, either AC or DC. Although simple in operation, the Intel lock provides many other features not always found in one package. Some of these built-in easily selectable features are: terminal points for access control devices; dry contact outputs for monitoring lock status; and internal switches for selection of sonic sensor, PIR sensor, door height, audible tone, normal or delayed unlocking via sensors. Terminal points for manual reset of delayed

unlocking, and adjustable timers for delay time on relock and sonic sensitivity are also included.

Another important feature added to the latest model is an SPDT dry contact output for signaling "request to exit" when the release sensors are activated. This will allow compatibility between the lock and a card access type system.

The 3940 Intel by Security Engineering, Inc. is one of the most advanced locks on the market today. The elimination of additional field wiring and controls, the compatibility with life safety and handicap requirements, and the inclusion of "systems" features traditionally found external to the lock make it adaptable to most security applications. ■



The 3940 "Intel" lock.

The Keepsafer Plus Pro

"The Schlage Keepsafer Plus Pro features all the benefits of a professionally installed system at a fraction of the price. It is as simple to use as a microwave oven."

With ownership of security systems jumping 50% last year, public demand for a greater variety of security systems has accelerated dramatically. Accordingly, Schlage has introduced a new security system to be available through locksmiths that contains premium features found on professionally installed systems.

The Schlage Keepsafer Plus Pro allows a homeowner to install a security system as a permanent upgrade to their home. Yet, the Keepsafer Plus Pro features the ease of installation and operation features found on the entire Keepsafer line. The Schlage Keepsafer Plus Pro lists at \$349 and includes a control console, remote control, and three transmitter/sensor sets with Duracell batteries. The Keepsafer Plus Pro features all the benefits of a professionally installed system at a fraction of the price.

The Schlage Keepsafer Plus Pro is as simple to operate as a microwave oven and is virtually immune to false alarms. Users enter a three-digit access code into the digital keypad on the control console and select one of the desired alarm modes: Home sounds an alarm when a sensor set is interrupted at an entry point; Away provides entry and exit delays for up to 40 seconds; Day provides a doorbell annunciation feature; and Off which maintains an emergency alarm function and shuts down the intrusion alarm function.

Keepsafer Plus Pro features a variety of upgraded enhancements found in sophisticated systems including: identification, an access code cancellation option for the impaired, and sophisticated anti-jamming detection features.

Schlage's Emergency Dialer extends the capabilities of the Plus Pro to rival professionally installed systems. When an alarm is triggered, the Emergency Dialer automatically calls Schlage's 24-hour computerized National Central Station, where trained operators alert local authorities—police, fire, medical.

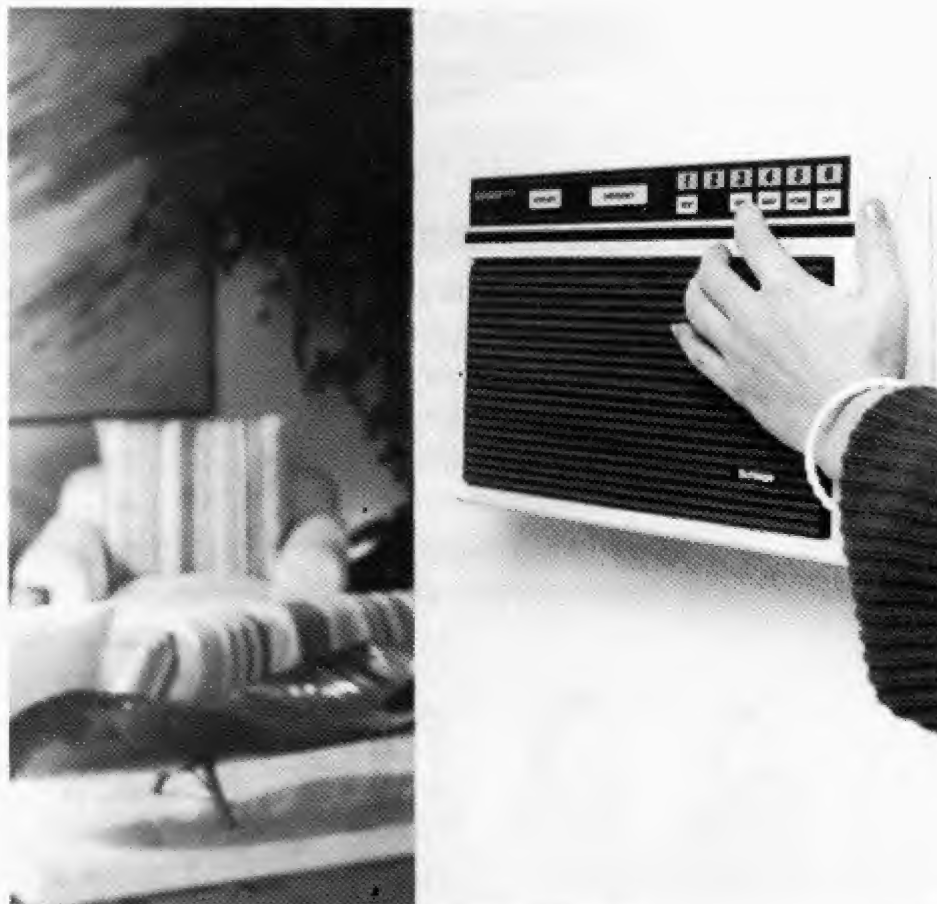
The National Central Station then confirms the user ID code and takes appropriate action. The Emergency Dialer lists for \$99. The monthly subscriber fee is \$15.

Keepsafer Plus Pro can be custom tailored with a complete line of accessories including extra transmitter/sensor sets, back-up power supply, additional sirens, medical pendant, bedside alarm, smoke detector, houselight controller/lamp modules and a glass break detector. Keepsafer Plus Pro is one of the few systems on the market that interfaces with the Area Detector, an auxiliary interior protection device that is the standard of protection in the

alarm industry.

The Schlage Keepsafer Plus Pro has become popular with builders and professional installers. The wall mount installation allows for a home upgrade feature combining easy installation, simple operation, and an affordable price.

The Schlage Keepsafer Plus Pro is part of a complete range of security systems offered by Schlage addressing the needs of consumers and professional installers. The Keepsafer product line is backed by Schlage's sixty years of experience in the security industry. All products feature a one-year warranty. ■



The Schlage Keepsafer Plus Pro

Airport Uses Magnalocks

"The Magnalocks provide the airport with a reliable life safety system. The locks are fail-safe and do not physically block the door. But they are quite secure."

by Kelli Clayton

Faced with a projected 15-20% increase in passenger traffic to over 6 million by 1990, Port of Portland International Airport (PDX) officials last year approved a \$40 million expansion and upgrade of the airport's 15-year-old main terminal.

While relieving traffic and traffic flow within the main terminal area, the new construction has meant adopting other less obvious—but very essential—changes. One specific area was security.

PDX has implemented one of the most comprehensive and sophisticated centralized access control systems currently in use at a U.S. airport today. As part of the access control system, airport security has pioneered a unique concept of passenger gate protection that is currently under study by the Federal Aviation Administration (FAA).

Entrance Controls, a Vancouver, WA-based alarm dealer, installed a \$250,000 access control and alarm monitoring system to protect entry/exit for more than 120 terminal doors and passenger gates. An American Magnetics console provides 24-hour monitoring for smoke and fire, localized entry/exit alarms, infrared wide area sensors and alarms, card readers and electromagnetic door locks.

About 4,500 airport and airline personnel receive coded cardkeys that allow them in selected areas within the PDX complex. All doors permit authorized cardholders to enter restricted areas. An alarm sounds when a door remains open longer than a pre-designated time period. A timer allows one individual to pass through the door without activating the alarm.

PDX's passenger gate system is the first devised to accurately record gate usage, according to Larry Rank, Airport Manager of Protective Services.

In use, the PDX gate system lets authorized personnel automatically monitor and control the exact opening



Magnalocks secure the doors.

and closing of passenger gates. Authorized airline ground personnel program the specific time period in which the gates are to remain open for airport personnel and passenger boarding and disembarking. Electromagnetic locks (Magnalocks by Securitron, Torrance, CA) secure the gates at all other times. The security system automatically releases the Magnalocks anywhere from 15-60 minutes according to the typical pattern of passenger flow at each gate.

A warning signal alerts ground personnel five minutes before the time period is almost up. Should additional time be required, the system allows authorized gate personnel to override the alarm system during the pre-programmed period to prevent unwanted or false alarms. The entire override process is recorded and monitored at the security system's central console.

"The FAA is currently studying the system to possibly require stricter regulations at other airports," says Larry Marbut, Entrance Controls' Representative. "Since the FAA mandated stric-

ter regulations, other airports will probably try to copy our system in order to get easy FAA approval."

"The use of central access control is a new concept for airport security," Marbut says. "Airports traditionally use code locks or keycards to control passenger boarding and disembarking."

Electronic features of the Magnalocks enable the access control system to also provide proper reporting and alarm protection for all other protected entry/exit doors to meet both FAA security and fire exit requirements. A special "Senstat" feature of the locks sends lock status voltage sensing signals to the central console to indicate that the doors are both closed and fully secure.

Each protected door or gate uses a 1 3/4" (D) x 2-154/16" (W) x 8" (L) stainless-steel Magnalock mounted to the door frame with a 1/2 x 2 3/4 x 6" strike plate bolted to the swinging door. Metal surfaces are cadmium plated for corrosion proofing, and the lock is fully sealed in resin to resist tampering.

The Magnalocks provide the airport with a "reliable life-safety system," says PDX's Rank. Unlike electric locks that may jam, the electromagnetic locks are fail-safe and do not physically or mechanically block the door in any way. Yet they provide 1200 pounds of holding strength when activated.

"In the event of an emergency, like a fire alarm, the electricity going to the doors in specific areas is cut off, the locks release, and the alarm is detected by police and security," states Rank. Manually operated emergency door controls are also located near exits. For any uninitiated power outage, the low power Magnalocks draw on a long-lasting battery back-up system.

An installation as large as PDX meant that for cost reasons, door alterations needed to be kept at a minimum. "With Magnalocks we avoided major hardware changes to the doors,"

Continued on page 74

Manipulating With Mr. Breeze

"Mr. Breeze is a device which allows the manipulator to accurately divide the distance between the dial gradations into tenths of a number."



by Robert Sieveking

For those not familiar with the state of the art technology that has recently crept into the safe manipulation field, meet Mr. Breeze. Mr. Breeze is a device that allows the manipulator to accurately divide the distance between the dial gradations into tenths of a number. The graduations of the target are so minute that a magnifier will be needed if you care to count the lines. Yet the optical scanner will accurately count and display the exact radial position of the dial. Integrated with the numeric display and scanner is a high gain amplifier that allows the Breeze to hear a contact point and freeze the display at the exact moment of contact.

In practice, the manipulation is carried out using the standard proven methods that have been opening safes and vaults for many years. The new twist is that the difficulties encountered in reading between the lines and seeing minute changes in the position of the contact points have been greatly simplified.

Without becoming too technical, Mr Breeze is a single digit count-up counter. The counter is driven by an optical digital scanner. The scanner senses the presence of the white lines on the target and supplies a pulse to the counter each time a line passes under the scanner. An audio amplifier with a magnetic microphone, which attaches to the face of the safe, supplies a signal to the counter to stop the count when a click is produced by the drive cam striking the nose of the lever. The concept is quite simple. The process is a little more involved.

Let's examine the front panel. (See illustration 1. Clockwise from the upper left, the display time control reg-

ulates the length of time the L.E.D. readout is frozen until it resets. The sensitivity control regulates the signal level required to stop or freeze the display. The on/off gain control is the main power switch and amplifier gain or volume to the headphones. The mic jack is provided for the magnetic microphone. The headset jack supplies audio for the headphones. The peak indicator is a red L.E.D. which indicates that enough audio is being coupled to the counter to freeze the display. The battery L.E.D. is a low power indicator. When the indicator is

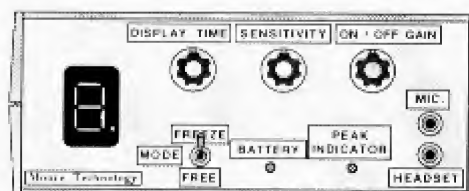


Illustration 1

lighted, the batteries should be recharged. A jack at the rear of the instrument allows the charger (supplied with the kit) to be plugged in. The mode switch is used during set-up to allow the counter to count without stopping the count. In the up or freeze position, the counter will stop counting if an audio click is sensed by the microphone. The numeric display is a single digit display and will show numbers 0 to 9 and a decimal. The decimal is lighted during the manipulation to indicate that the reading is frozen.

Illustration two shows the optical scanner and target set-up. The magnetic all position scanner mount allows the reader to be placed conveniently near the dial. The universal joint allows the scanner to be positioned above the target. The target holder is fastened to the safe dial by means of a heavy rubber band. The target detail shows the proper position of the gummed target on the target holder.

In test driving the Breeze, I found some good points and some points that could use further refinement. The

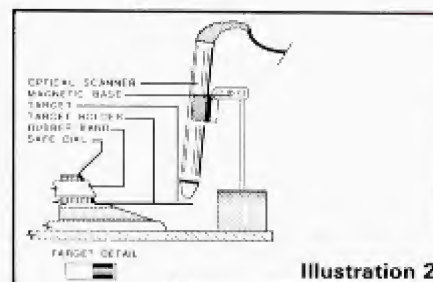


Illustration 2

amplifier is great, it is high gain and the magnetic microphone is very sensitive. The digital scanner didn't miss a count, though the universal mounting on magnetic base allowed the scanner to be jarred away from its set point. Calibrating the scanner back to its original set point accounted for some lost time during the manipulation. A more rigid mounting could easily eliminate this inconvenience. The target holder is very universal, being made from brass, and it can be bent to conform to most knob styles. The use of double faced tape between the holder and the dial, along with the rubber bands formed a solid mounting for the target. Like most tools, the Breeze requires practice to become proficient in setting the controls. Since the gain and sensitivity controls are interactive, properly setting the controls can take a little getting used to. Once the controls were properly adjusted, the count was tested for repeatability and passed with flying colors. (Plus or minus one count in ten passes over the same wheel position.) The target area was found to be almost too accurate. When the lock gave an indication of 1/2 number, the indication was off the scale. The display time control was adjusted to minimum and it was found that a display duration of about one half second was most convenient. End play in the safe dial and other sounds made by the safe lock created some problems with freezing the indication at an arbitrary number. If the lock is in good condition and the contact area is relatively silent, with well defined contact points, the Breeze could be a very handy tool to have. ■

A New Mercedes Lock

"The previous Mercedes valet and master keys had the same cuts on them. On the new style, the valet and master have different cuts. So I experimented."

by Steve Spiwak

One of the more interesting types of automotive keys is the laser cut or milled keys. This type of key is most often found on the very expensive European autos. As a result, those locksmiths who can properly service these vehicles will reap substantial rewards.

The keying arrangement for the Mercedes-Benz 380 CE is like many other foreign car locks; the master key will enter and operate all the locks, while the valet key will enter and operate only the ignition and door locks. (See photograph 1.)

The forerunners of the present Mercedes-Benz 4-track keys allowed



1. On left is Master. Center is space key. Right is valet key.

the locksmith to generate a master key by duplicating the cuts from a valet key onto a master key blank or vice versa. The current Mercedes-Benz keys prevent the application of this simple

procedure.

The previous Mercedes valet and masterkeys had the same cuts on them. On the new style, the valet and master have different cuts. I therefore tried an experiment. I first tried to duplicate the valet key onto the master blank. This new key would enter all the locks. However, this key would operate the doors, ignition, and glove compartment, but not the trunk. When the master key is duplicated onto a valet blank, the new key will operate the ignition and doors. This cross-duplication procedure which was acceptable before is unacceptable now because of the unexpected problem which it causes.

The alarm is armed and disarmed

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through the door lock. Duplicating this particular key will allow it to operate the alarm system. However, duplicating the valet key onto a master key blank will operate the doors, but not the alarm. The best advice that I can give to you when dealing with these specific types of Mercedes-Benz keys is not to cross duplicate keys.

It is interesting to note that Mercedes-Benz has a policy to require that its authorized dealerships either order replacement keys directly from the factory or simply replace the entire set of locks, including ignition, both doors, glove compartment, and

trunk.

Although it may be difficult to create a complete working key for the 350 CE, it is not impossible. While a cut key will enter the lock, a key blank will not. To make a complete working key for this lock, the most accessible point must be determined.

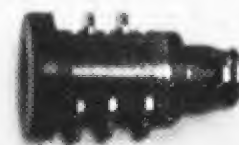
In this case, the best point is the glove compartment lock. This particular lock will not contain all of the discs necessary to make a complete working key, but it can be used as a good starting point. As this keyway is examined, you will immediately notice that these are not usual Mercedes discs.

You can see these unusual discs by looking toward the top left corner and the lower right corner of the keyway. The key itself is cut on four planes.

The glove compartment lock contains discs in only two planes that are common to each other. This will be referred to as the A plane. The top left corner is the A1 plane and the lower right corner is the A2 plane. The two remaining planes will be referred to as the B plane. The top right corner is the B1 plane and the lower left corner is the B2 plane.

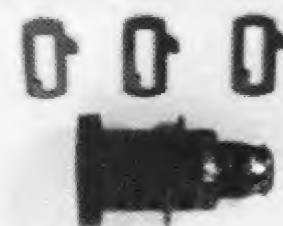
Be careful when disassembling the glove compartment lock. Strangely enough, this lock is made of very breakable plastic. The plug itself snaps in place and is securely held by four tabs. To remove the plug, gently pry back all four tabs simultaneously. This was an extremely difficult technique to master. When extracting the plug be sure not to let any of the discs fall out. This can happen quite easily as they are not staked in place.

Once the plug is removed you will see the five discs. At this point these discs will resemble most other double sided foreign automobile locks which feature staggered discs. (See photograph 2.)



2. Five staggered disks.

However, once you remove the discs you will notice some distinct variations. First, these discs seem to be the ones that would be found in a master keyed disc tumbler cylinder. (See photograph 3.) Upon closer examination a



3. Discs resemble those found in a masterkeyed disc tumbler cylinder.

two digit number is found to be stamped on each disc (i.e. 11, 12, 13, 14 or 15). Simply eliminate the first digit and you have the correct depth number. This fact will only give you the first five cuts on planes A1 and A2.

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After inspecting the discs I noticed that all four corners have serrations. There are also matching serrations in the case. This will make lock picking more difficult. The discs themselves have a tab that contacts the springs in different positions to make reading the lock in a relaxed position extremely difficult. It accomplishes this by making two different depths appear to be exactly the same.

The logical lock to start with would be the door lock. Upon removal of the door lock you will notice a switch connected to the lock itself. The switch snaps into place on the door lock. Gently pry the switch off. Using the master key causes a bushing to be lifted which operates the alarm. The valet key has no effect on this bushing.

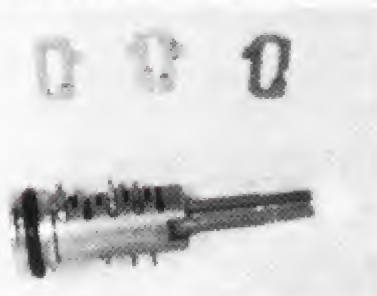
Begin the door lock disassembly procedure by removing the roll pin that holds the tailpiece. Turn the key ninety degrees and pull it out as far as possible. Turn it back again to completely remove. Be careful not to let any of the discs fall out.

The plug interlocks with the door lock casing and must be turned before it can be disassembled. If the plug cannot be turned, remove the visible roll pins. (See photograph 4.) Beware of the pins and springs that will be released.

Looking at the plug you will notice that the very first discs are oddly shaped. This disc retains the key when the plug is turned. The next disc is a solid one. Just like the one in the glove box lock. That is also for plane A. The next three sets of discs are split. One side of the disc will work on plane A. The other one on plane B. Each one of



4. Remove the visible roll pins.



5. The discs are stamped with depths.

these discs are also stamped with the depth. (See photograph 5.) This is your first indication of cuts on the B plane. The cuts in the first four spaces allow the key to turn in the cylinder to operate the lock. It is the final four cuts that operate the alarm.

When these discs are removed you will find them stamped also with two digit numbers. This time with a prefix of 3. (i.e. 31, 32, 33, 34, and 35). These cuts, after being decoded, will be cut on the B plane.

After you have correctly fitted the key, you will find that reassembling the lock can be as difficult as realigning Rubik's Cube. It is quite possible to do this, but it can be very frustrating. If you turned the plug to remove it, then you will notice a hole in the casing. Slide a shim into this hole, and turn the plug. This will shear the shim, but at the same time allow the lock to be reassembled.

On the other hand, if you have completely disassembled the lock, this technique will not be necessary. Before you reassemble, be sure that the bushing moves freely on the plug tailpiece. If you decoded the glove box lock first, you can proceed to the next step. If not, go back to the glove box lock. Then utilize the progression method to



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determine the key bittings in the fifth space of the A plane. So far the key is missing cuts in the first space of the B plane and spaces 6, 7 and 8 of the A plane.

Once a key has been made to work the doors and glove compartment locks, the next step is to make the same key fit the trunk lock. Once again progression is the suggested technique which you will use to determine the seventh space of the A plane. The trunk lock has solid discs in spaces 1, 2 and 3, and split discs in spaces 4, 5 and 7. However, the trunk lock has no discs in spaces 6 and 8.

To physically disassemble the trunk lock, first remove the snap ring at the back of the plug. The plug must be

turned to be removed. When the plug is removed be careful of two things. One, do not let the discs fall out of the plug, and two, be careful not to lose the ball bearing and spring once the plug is removed.

The first disc is used to retain the key when it is turned. The next group of three discs is solid. The following group of three discs is split. These discs are found in spaces 4, 5 and 7. If you start with the trunk lock, then you will have to progression two or more spaces, depending on which lock you choose to work on next.

Next, proceed to the ignition lock, and progression the sixth space of the A plane. The only cuts that have no

value on this key are the cuts in the first space of the B plane and the eighth cut on the A plane. Any cuts can be used in these two positions as long as they follow the rules of having a Maximum Adjacent Cut Separation of two (MACS of 2).

To physically remove the ignition lock requires that the plug be turned initially. This will allow the shutter to align with the retainer. Note that the face of the ignition cylinder is hardened.

To physically disassemble the ignition cylinder, begin by carefully removing the roll pin on the side of the cylinder face. A plate on the side also has to be removed. Be careful when removing this plate as well. This plate which surrounds the keyway with an opening is designed to retain the key and the plug at the same time. (See photograph 6.) Once the face plate and



6. A plate surrounds the keyway to retain the key and plug at the same time.

retainer are removed, the plug will slide out of the back of the lock. The first disc is solid, the next three are split, and the following three are solid.

Just be sure to remember the two cardinal rules for decoding these particular Mercedes-Benz locks and keys. First, there is a maximum adjacent cut separation of two (MACS=2), and the split discs appear only in the spaces 2,3,4,5, and 7.

Now that you can make a key for this Mercedes-Benz when there is no key available, it is time to tackle the problem of recombining the locks when the keys have been lost or stolen.

The locks can be recombined by carefully moving the tumblers into different positions. However, you should not attempt this procedure without a well formulated plan.

Before beginning, remember the three rules which must be followed when recombining these cylinders.

1. Never arrange discs so that there is a combination containing a: 1,4 1,5 2,5 4,1 5,1 5,2.

2. Never place two #1 split disc tumblers in opposing spaces. This will prevent the key from fully entering the cylinder.

Continued on page 75



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Von Duprin Exit Devices

"This article will deal with the installation of Von Duprin series 88 panic exit devices. The 88 uses a cross-bar while the 99 uses a more modern looking touch bar."



by Don O'Shall

To be a professional locksmith today requires a greater and deeper knowledge about all types of locking devices. The public expects it and is willing to pay for it.

This article will deal with the installation of the Von Duprin 88 series panic exit devices. The 88 series uses a cross-bar, while the 99 series (also

heavy duty) uses the more modern looking touch-bar.

Because of the wide variety of options available for this product, in terms of functions and trim, no article could hope to cover the 88 entirely. Instead we will concentrate on some general instructions, and on the more popularly available functions and trim.

Perhaps, for the newer locksmiths, it might be beneficial to describe what we mean by function and trim. Function refers to the job that the lock, or in this case the panic device, is intended to perform. On the surface this might seem a bit obvious for a panic exit device...its job, quite obviously, is to allow people to have a free exit in the

event of a panic situation, such as a fire.

But not so obvious are the many ways that this can be done in terms of re-entry once the panic situation is over (or before it begins). If we don't want *any* re-entry through the door, we would use Von Duprin's EO (exit only) function, which is the easiest to install, since the outside has no hardware on it whatsoever, and the installation needs no holes bored through the door unless we are going to through-bolt it.

In their NL function, a keyed cylinder on the outside of the door, when turned by the proper key, pulls the latch in, allowing access, but once the key has been removed, the door is locked again.

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In their TP function, a keyed cylinder on the outside of the door, when turned by the proper key, locks or unlocks a thumbpiece. In this case positive latching exists for fire safety, but during the time or times that the thumbpiece is unlocked, entrance can be gained by the simple operation of depressing the thumbpiece.

In their TP-2 function, which is no longer available for the 88, but remains available in the 99 series, it is desired that entrance be possible during certain times by simply depressing the thumbpiece, but that, once the thumbpiece is locked, keys can exist that pull the latch in without unlocking the thumbpiece, so security can be maintained. This function is most often seen in colleges and universities, where during the day open access is the rule, but after hours security is desired.

Although other functions are available, these will account for the majority of the locksmith's encounters with the Von Duprin panic exit device.

Now, let's look at trim. By trim we mean the hardware that is applied to the door other than the locking device itself. Examining our function descriptions, we can see that the EO device will

typically use no trim, or at worst a push plate.

The NL function, however, will need some type of handle or door pull applied to the outside of the door so that people don't (or shouldn't) try to use the key alone to pull the door open.

Both the TP and TP-2 functions will need the cylinder, a handle to pull the door open with, and a thumbpiece. This will require more holes to be drilled through the door, or changes to the existing holes.

Once we know the type of trim required, we still must decide what *design* of trim, also. For most locks, the design doesn't affect the installation procedures very much, but on exit devices, it makes a very large difference. Our basic holes will remain the same, but we may have to add up to six more to allow the trim to fit. For example, some large plate trims will require a cylinder hole, a thumbpiece hole, and four holes for through bolts to attach the plate itself. On some devices these holes for the through bolt will be the same as the holes for the device mounting screws, but this is not always the case.

There is no way that this article can

examine all the possible trim variations, so we will concentrate on sectional trim (where there is no plate, etc.), to connect the cylinder to the handle or thumbpiece and handle.

With the exception of the TP-2 device, the 88 series are non-handed, which means that the device head can be installed on either a right-hand reverse bevel door or a left hand reverse bevel door. By reverse bevel, of course, we mean that the door swings to the outside. If it doesn't, a panic bar would be useless.

The first job in installing the device is to measure the horizontal centerline (or latch centerline). This is measured as thirty-nine and thirteen sixteenths inches above the finished floor (39 13/16"). This should be marked with a small pencil line on the frame itself.

On most locks we would next measure the backset for the lock, but in panic bar installations *there is no fixed backset*. Instead of measuring for our installations from the edge of the door, we must measure from the inside with the door closed. The ruler or measuring device is placed flush with the edge of the frame, and the measurement taken from that point on.



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And even then, there is not simply one possible measurement. Von Duprin uses three common strikes. The 1606 is a recessed catch strike, where the latch actually *enters* the frame. From the surface of the frame this strike projects $\frac{3}{8}$ ". The 264 strike is a surface applied strike that projects $\frac{9}{16}$ ". The 299 is a surface applied strike with a $\frac{7}{8}$ " projection. (See illustration one.)

Because of the three possible measurements from the frame edge to the vertical centerline of our cylinder cutout (which we will refer to as the centerline, even though it is not the actual centerline of the lock case itself, since it is our reference point for all measurements).

For the 299 this measurement will be $2\text{-}9/16$ ". For the 264 it is $2\text{-}5/16$ ", and for the 299 it is $2\text{-}1/16$ ". (See illustration 2). Mark this point with a pencil dot, and you are ready to begin taking the rest of your measurements from that point. A ruler with a built-in level indicator for both horizontal and vertical measurements is a real plus at this stage of the game, because it is critical to proper operation of the device that the cross-bar be precisely horizontal

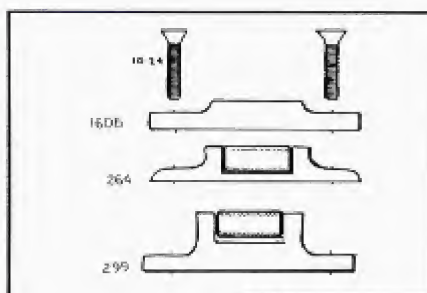


Illustration 1
Common Von Duprin strikes

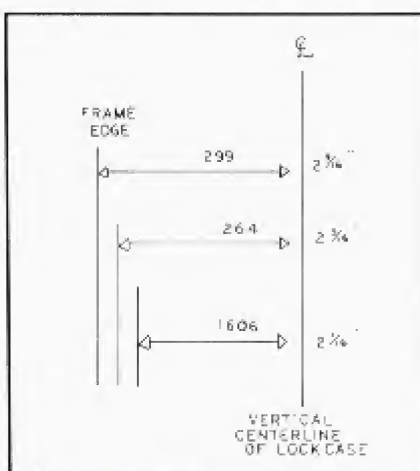


Illustration 2
Von Duprin centerline measurements

and the lock case mounted precisely vertical. Small deviations could affect its ability to perform properly in a life-safety situation, or to reduce the amount of security it can provide.

From your pencil dot mark, the upper set of screwholes will be located $3\frac{1}{4}$ " up. Mark this spot with a small pencil dot also. Next we will measure from this dot to the mounting screw location on the side where the door opens. This will be a distance of $1\text{-}3/16$ ". Mark its location, and then measure from the small second dot we made over to the screw location closest to the hinge side of the door. From the dot this will be a distance of $15/16$ ". Mark it also, and then double check the distance between the two screw location marks you made. If you measured correctly, this should be a distance of $2\frac{1}{8}$ ".

Now return to the original dot we made to indicate where the two centerlines meet and measure from there down a distance of $3\frac{1}{8}$ ". This is the distance from our centerline to the lower screw holes. Once again, we measure $1\text{-}3/16$ " toward the opening side of the door from this point and mark that screw location. Then we measure from



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the center point 15/16" toward the hinge side of the door, and mark our second screw location. Once again we finish up this step by checking to be certain that the distance between the two marks is 2 1/8". Next we double-check our hole placement by another pair of measurements which will be taken from each upper screw location to its matching lower screw location. This should be a distance of 6 3/8".

If we are installing an EO function device, this should be the last measurement in order to place the device head. If we are installing any function which requires an outside cylinder, however, we will need to take our measurements for the cylinder hole also.

From our original mark in the center of the device, measure up one quarter of an inch (1/4") and mark this location. By the way, I usually put either a small circle or an "X" on the holes I intend to drill to separate them from the reference marks.

If our trim or function will require a thumbpiece, we measure from our original centerpoint down a distance of 2-11/16". Double-checking this measurement against our cylinder mark should give a distance of 2-5/16".

That finishes the measurements for the device itself, but we still will need to take any measurements necessary for the operation or installation of our trim package. Most of these measurements are easier to take from the outside of the door once the other holes have been made but some can be taken at this stage. For example, on the sectional trim I am using while I write this article, the thumbpiece will line up fine with the thumbpiece hole, but the mounting screws for its handle will need to be marked on the inside of the door. It required one mark a distance of 1 1/8" from the thumbpiece mark (3-9/16" from the original device center mark).

It also required a second hole six inches below the first, for the lower handle mounting screw. As mentioned earlier, of course, this pair of holes will only apply to the trim I used on this job. Check the trim that came with your device to determine the actual holes it will require for proper installation.

Finally we are ready to begin cutting the holes. If you are using a Von Duprin rim cylinder bracket, the cylinder hole should be 1 1/4" on the out-

side and 1 3/8" on the inside, although if the trim will permit it this can be 1 3/8" throughout. On this installation, I am using existing hardware, which includes a standard rim cylinder mounting bracket, and thus only a 1 1/4" hole. If the mounting plate has holes for back-up screws, these should be drilled also, but I would suggest waiting to do so until the cylinder alignment has been tried out by rough-mounting the device. This is an extra step, but the time it can save should more than pay for the small amount of time it takes.

The thumbpiece hole should be cut 1 1/4" also. The mounting screw holes will depend on the door material and the screws themselves. The screws that come with the device are 10-24 for metal doors or #10 wood screws. The charts I have show a #25 drill before tapping the metal for the 10-24. For the wood, the actual size of pilot will have to be decided based on the hardness of the wood. Generally, however, a 9/64" bit will suffice.

If you are using through bolts, these will determine the holes that are necessary on both sides of the door. Before

Continued on page 76



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Antique Locks In France

"The ingenuity of the systems never seems to end. One lock mechanism features a tiny pistol. If the proper key is not used, the intruder is shot!"

by Marie Harris

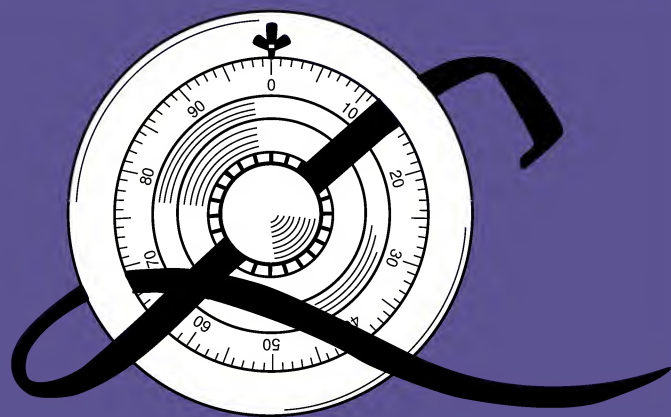
In the late 1960's Albert Bricard undertook the daunting task of rehabilitating the seventeenth century Hotel Liberal-Bruant in the Marais district of Paris. The old townhouse was in virtual ruins, having served among other things as an engineering school, a factory, and a paint dealer's workshop. The courtyard was littered with sheds. The facade was sorely in need of repair. Several years and much work later, the structure was returned to its original splendor and became the repository for the astonishing collection of "serrurerie," the French word meaning "locksmithery," but encompassing as well

the art of metalworking. Here on the rue de la Perle, in five rooms flooded with light from tall windows, is a most extraordinary collection of locks, keys, chests, door knockers and bolts which comprise the Bricard family collection.

It was begun in 1840 by Eugene Bricard, son of a soldier in Napoleon's army and founder of the Bricard firm that is still owned and operated by the family. Bricard used the examples of locksmithery he collected as models for his firm's products. The scope of the collection grew under the auspices of succeeding sons and grandsons and was finally displayed to the public. Today, both the museum and its con-

tents are spectacular.

The earliest places in the collection date from Roman times. Given the Roman passion for money and propensity for owning slaves, there must have been locks aplenty. But few examples have survived since the Romans preferred iron over bronze, as it was stonger and cheaper. But iron had a short life span in that climate and rusted away. Another reason for the scarcity of Roman locks may be the fact that, over the time of Rome's decline and fall, it is likely that many of the best locks were either smashed by succeeding waves of invaders or carried away, still attached to the coffer they



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guarded, souvenirs of the mechanical marvels of Roman civilization.

Keys, however are another matter; they survived because they were made of bronze or iron and bronze. Many of the keys on display are mounted on rings, as though the pocketless togas demanded it. The museum guard suggested the the smaller rings, fit for a woman's hand, were "clefs des bijoux" or keys to the jewels: a kind of engagement ring. If a woman could be entrusted with the key to a man's material wealth, she would most certainly be fit to be his wife!



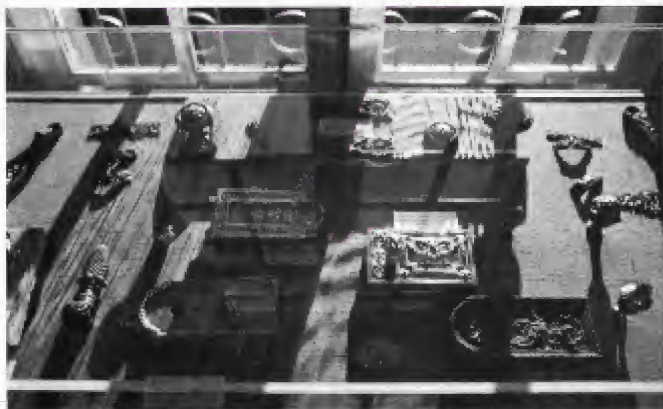
"Serrure a secret" (hidden lock) in the form of a cartridge and decorated with laurels and vines.



Forged iron door knocker: end of 16th c.

As the value of goods to be safeguarded rose, so did the skills of the locksmith. Less and less work was done by the locksmith at his forge; more was now done with saw, hammer, chisel

Continued on page 61



Case containing, among other things, a bronze chest lock made by Charles Delafosse (1734-1789) and a door lock made for the Chateau de Tuileries during the reign of Louis XVI.



Bronze door lock.



19th c. bronze door knocker.

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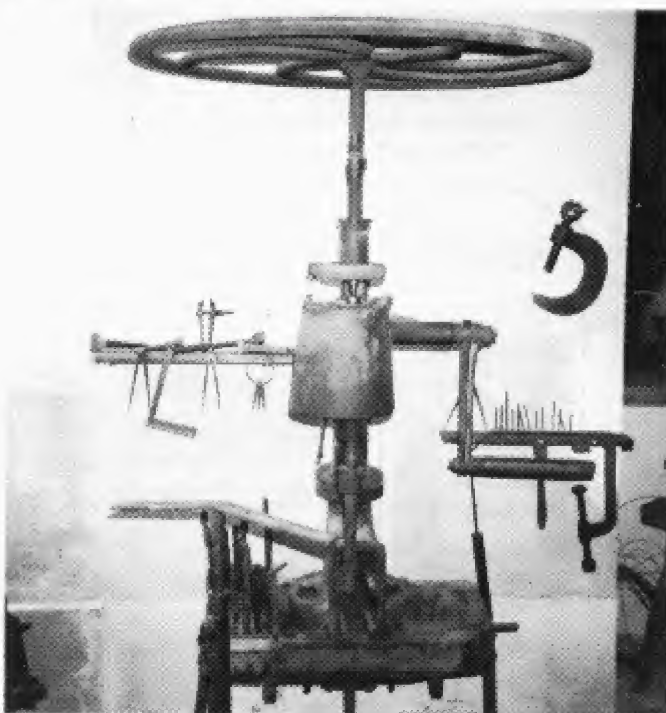
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Bronze "bouton de tirage" (door pull)



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19th c. bronze door knocker after a model made in 1608 by A. Vittoria of Venice.

and file. Keys and locks had gained in sophistication, ornamentation and concealment. And nowhere more than in France was the art of the locksmith most honored. Francis the First was an early champion of French locksmiths, and succeeding monarchs continued to be active patrons of the craft. Louis XVI was himself an amateur locksmith, and his queen, Marie-Antoinette, demanded beautiful and complex hardware for the palace doors and windows.

Just as architecture has become more than the craft of providing shelter, so keys and locks had become as valuable for their appearance as for their utility. Perhaps the most brilliant examples are the "serrures de maitrise," the masterpiece locks and keys wrought by journeyman locksmiths as a kind of "final exam" in their quest to become members of the locksmith

guild, or union. The complicated mechanisms are highly decorated and polished, and their attendant keys are equally elaborate, with pyramidal bows and double bored shanks, often in the shapes of hearts, fleurs-de-lis or trefoils.

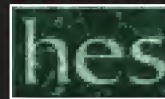
The eighteenth century brought the development of new metal-working techniques and the Bricard Museum displays many examples of gilded bronze hardware. Nineteenth century doorknobs and doorknockers take on sculptural proportions. And the ingenuity of the safeguarding systems seems never to end. One chest, for instance, is fitted with 26 separate locks. Another lock mechanism includes a tiny pistol. If the proper key is not used, the intruder is shot!

In room after room, case after case, this small museum presents elegant surprises: coffers and handles and

padlocks and door pulls. There are keys of all varieties, from skeleton keys to chamberlain's keys to prison keys in an endless array of styles. There are even keys to chastity belts fashioned during the Crusades; but, though the keys are on display, the chastity belts are locked away in Cluny Museum across town.

And finally, in a little room off the museum courtyard, the visitor can see displayed the antique tools of the locksmith's trade, as worn and used as the products are polished and perfect.

The museum's guest book is filled with enthusiastic responses to this unexpected experience. Glancing through the pages, one is stopped by a particularly charming note: "Ah, but where is the key to the mysteries of the universe?" If that key exists anywhere it's likely to be among the treasures in the Bricard Museum! ■



Electronic & Access Control Products

Adams Rite Manual Available

A 32-page manual of electric strike advice in non-technical language is being offered free by Adams Rite Manufacturing Company.

Originally published for only the City of Industry, California Company's own factory representatives, the manual is sub-titled: "More Than You Ever Wanted To Know About Electric Strikes." Its contents consist of three main sections: 1) Strike Selection; 2) Installation and 3) Troubleshooting.



Circle 255 on Rapid Reply

Continental Instr. CardAccess 25®

A new on-line Access Control system has been introduced by Continental Instruments Corporation. This system, CardAccess® 25, features a magnetic stripe reader and low cost high energy magnetic stripe encoded cards.

CardAccess 25 is capable of controlling 975 uniquely encoded cards. The magnetic stripe cards may be easily validated or voided using the unit's keypad which is an integral part of the system. This feature eliminates the need for a separate hand-held programmer.



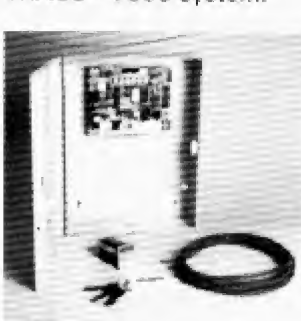
CardAccess 25

Circle 254 on Rapid Reply

Del Norte's Door Processor

Del Norte Security Systems introduces the Door Processing Unit 1200 (DPU 1200). Available for immediate delivery, the DPU 1200 can control two doors or gates for up to 2000 key or card users with access times scheduled to meet the individual user's requirements.

The DPU 1200 will not become obsolete as user needs expand. The system can be easily and is compatible with the larger TRACS® 7000 system.



Circle 252 on Rapid Reply

Detex's Multiple Door Access Control

Detex Corporation introduces Dentco® II MDS (Multiple Door System), expandable to 32 doors. It lets users program access control from a central location, or at each individual door.

There is a 12,000 card capacity, and programmable time zones control cardholders' access by "shift." Programmable mode changes let you schedule the security status of each door.



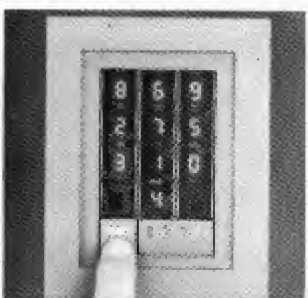
Circle 253 on Rapid Reply

Hirsch Electronics' Scramblelock SL24+

The SL24+ is designed to directly unlock electric locks and drive 24V dc locks with up to 16amp inrush loads on either or both of its two power relay outputs.

The ScrambleLock SL24+ utilizes high security features of the Digital Scrambler® electronic keypad.

These features include: 1-2 access points; 1-8 user codes; 1-8 digit code length; 1 or 2 door modes; fail secure or fail safe operation; 2 power output relays and 2 control relays.

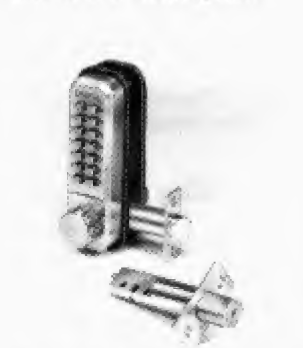


Circle 259 on Rapid Reply

Noblit Industries' Digital Deadlocks

Noblit's series 2200 push-button digital lock offers top security for storm doors, mobile home doors, trailers, boat and cabin doors and many others.

The series 2200 non-mortise pushbutton lock is furnished with two keepers, one surface and one mortise. It installs with three each 5/16" holes through the door and the only tool needed for installation is an electric drill. It also features an extra heavy duty 4-layer laminated locking bolt.



Circle 256 on Rapid Reply

Locknetics Electro- Magnetic Security

The 271 Series Magnetic Shear Lock is a totally concealed, high-security electronic lock. No hardware intrudes on the architectural integrity of the door or frame. The low profile of the design is so compact it can be used with full glass, revolving doors and aluminum store fronts.

This series of locks provides a holding force in excess of 1200 pounds while drawing only .60 amps at 12 volts and .30 amps at 24 volts. They are available for either AC or DC operation and have built-in voltage spike suppression.

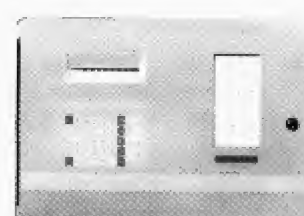


Circle 257 on Rapid Reply

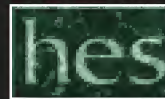
Modern Electronics' Prodigy Access Control

Modern Electronics (USA), Inc., introduces its new Prodigy expanded access control system.

Prodigy is a fully programmable controller that can be set up to perform an unlimited number of actions on up to 16 separate outputs. Prodigy's capabilities include features previously available only with systems incorporating dedicated computers. In addition, Prodigy can provide security control, time control, energy management control, minute-by-minute activity reporting, and more.



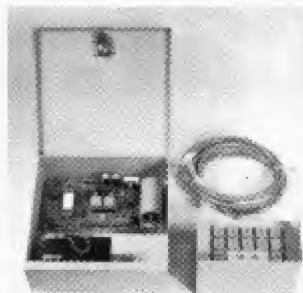
Circle 258 on Rapid Reply



Crypto Code From MRL, Inc.

MRL, Inc. has just introduced the Crypto Code model CC2500 stand-alone digital access control (previously released as 8500MP).

The CC2500 is a micro-processor control system with 31 separate access codes (one to eight digits, any combination) which can be individually added or deleted as employees, contractors, etc. come and go. All parameters of the CC2500 and are easily programmed from the keypad.

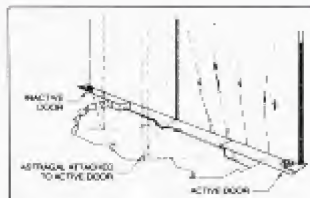


Circle 371 on Rapid Reply

Rixson-Firemark's Door Sequencing

Rixson-Firemark's 5400 Series introduces door sequencing controls in coordinated shallow-depth floor closers. The 5400 Series eliminates the need for a coordinator on pairs of labeled fire doors equipped with astragals, according to the manufacturer.

Designed for two-leaf, single-acting doors, closers in the 5400 Series feature an adjustable closing force and closing pressure, built-in backcheck feature, and a safety valve to prevent willful overloading.



Circle 368 on Rapid Reply

Rofu Expands Electromagnetic Line

Rofu International Corporation has expanded its line of electromagnetic locks and accessories with a number of new products.

The sliding door magnet, series 8000, with a holding force of 700 pounds maximum, can be mortised into a door jamb or can be surface-mounted by using the optional rim housings for the magnet and armature plate.

Z-bracket are available in standard and tamper-proof models for all series Rofu magnets.



Circle 369 on Rapid Reply

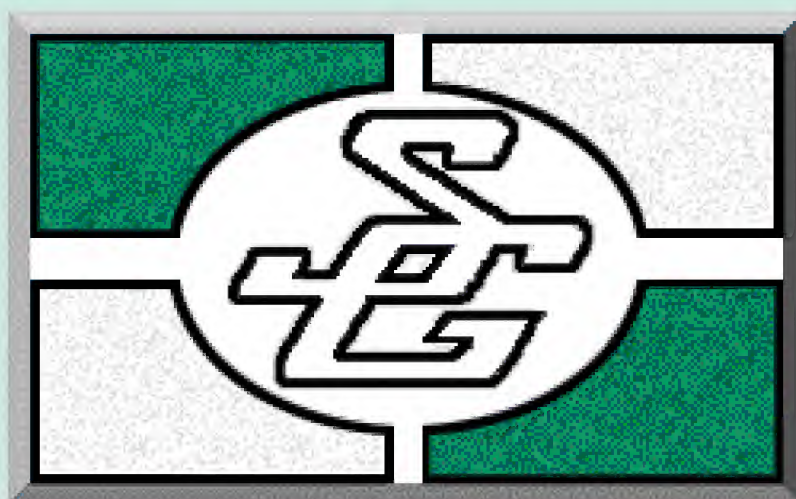
Securitron Introduces Touch Sense Bar

Securitron introduces its Touch Sense Bar, Model TSB1 which mounts on a door to allow free egress when the door is secured by an electric or electro-magnetic lock. A person exiting merely touches the bar which electronically senses this action and trips an internal relay, instantly releasing the lock.

The sensor reads through clothing so that gloves may be worn or persons may back through the door. If an object is inserted between the door and frame from the outside the lock will not release.

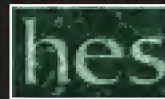


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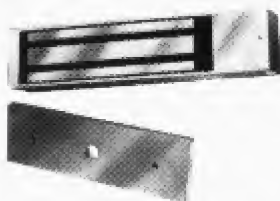
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Delayed Egress From Security Door Control

Security Door Controls announces a new EMLock Model 1511-101 which offers a 15 second delayed egress control system, while maintaining a fail-safe emergency exit.

This electromagnetic lock complies with NFPA-101 special locking arrangements, and utilizes built-in solid-state electronics. An 85 DB siren is in the case, and remote alarms also may be specified.



Circle 372 on Rapid Reply

Security Engineering Narrow Keyswitch

Designed to fit into a 1 3/4" square tube with 1/4" wall thickness, Security's new keyswitch is ideal for mounting in narrow stile frames. It is available in many of the 7500 series keyswitch functions. The faceplate is offered in two narrow widths, 2" (NR) and 1 3/4" (ENR).

The keyswitch is operated by any 1 1/4" or 1 1/4" mortise cylinder with a clover-leaf cam.



Circle 373 on Rapid Reply

Simplex's Pushbutton Access Control

The Simplex push-button combination lock is completely mechanical, requiring no electricity or wiring, so the lock is unaffected by power failure.

Combinations can be changed in less than a minute by any authorized personnel, without the need of a locksmith, as with ordinary tumbler locks. Large key inventories are eliminated, as well as the need for key retrieval when there is a turnover in help.



Circle 374 on Rapid Reply

Trine's 1001-2 Electric Strike

The 1001-2 strike from Trine Products Corporation has a 9/16" cavity depth and width as well as a keeper length of 1 11/16" which makes this new strike unique.

The 1001-2 is fail-secure. This electric strike has a heavy duty armature, latch spring, and solid cast latch. Isolated terminals provide safe connection. The corrosion resistant face plate is available in two colors.



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Shop Talk

Helpful Questions and Answers

In the December issue, Donald Trull requested keyblank information for some particular garage door rim cylinders. Jim from Kentucky Lock & Safe Supply wrote in to tell us that the cylinders are manufactured by a firm called Clopay. The EA27 blank will work. You may have to thin it down a bit on a grinder.

Another reader, Gary Long of Minnesota, has written *Shop Talk* a letter answering another December question:

This is in response to H.J. Ripley's inquiry on the Sterling rotary shackle padlock in the December 1987 issue of *The National Locksmith*.

The Sterling rotary lock is made by Engineering Unlimited in Minneapolis. I also handle and sell the line to my customers. The lock is primarily used by utility and cable television companies.

There are two sizes. The junior and the senior come in a choice of zinc or brass, have two keyways (either right hand or left hand), are available keyed alike or masterkeyed and both retail for under \$5.00. If your customer wants 60 or more locks you can get a reserved combination for them alone. No other person or company in the state will ever have the same combination.

Codes are not available as most combinations are reserved combinations. The code you found on the side

of the lock is in fact a key code. If this code is a reserved code, you are out of luck unless the customer who gave the lock to you is the original owner of the lock.

Key blanks are available to locksmiths who handle and sell these locks. However it is extremely difficult to duplicate these keys. You can duplicate all but the tip but on a key machine that can cut flat steel and safe deposit box keys except for the tip cut. That cut must be half the width of all the other cuts. The lock has spring-loaded wafers in it and a wide cut at the tip will not come in contact with the wafers which allow the shackle to rotate. You will have to make this cut with a jewelers' file (not a ward file). This design increases the security of the lock and



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prevents regular key cutters and unauthorized personnel from duplicating the keys.

If the code on your lock is not a reserved combination you can purchase a cut key from Engineering Unlimited in Minneapolis and in turn sell it to your customer. Their address is: 2841 Dupont Ave. South, Minneapolis, MN 55408.

Q: I have this school building to rekey. It has Russwin Unilock locksets with lever handles on the interior doors. I know how to take the Unilocks apart with a knob, but can't figure out how to take the lever ones apart. The lever has a big coil spring inside the spindle.

*Don Jacobs
Ohio*

A: You have done well by getting to this point with this lockset. If you will look at the end of the spring you will see that it has a hook on it which engages a hole in the body of the lock. The other end of the spring, down inside the spindle, has the same type of hook and it fits into a slot in the cylinder cavity of the lever handle.

Using a probe light, look down into the spindle to locate where the hook goes. You will also locate the large Waldes ring which holds the spindle housing to the knob. Quite often, for some reason the end of the Waldes ring moves just enough to block a part of the opening for the spring hook which prevents turning the spring and removing it. You will need long Waldes pliers to get down into the spindle, move the ring just a bit, and then remove the spring. Then you can remove the ring and spindle housing and have access to the cylinder.

Good luck with this one, and hopefully it will be the only one in the system that has this bear of a problem. 03

Q: Photograph two is a large lock. It weighs 4 1/4 lbs. Maybe some readers of The National Locksmith may have a key blank of this type—Yale #1 that I can buy.

*Horace Dierking
Arizona*

A: Well, Horace, it looks to me as though you have a "One of a Kind" padlock that has been put together by someone with lots of time. I checked



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2. Yale lock in need of a key blank.

with several padlock collectors and they have never seen or heard of a lock of this type. My guess is that it came from the San Carlos Indian Reservation since these people are excellent artificers of metals and have the time, skill and ingenuity to construct such an item. In interpolating the measurements from the photograph I come up with a case size of $2\frac{3}{8}'' \times 1\frac{1}{8}''$. If these figures are correct I can't imagine a mass of this size weighing $\frac{4}{4}$ pounds unless it was solid.

Your photograph is excellent and gives the appearance of a stamped stainless steel case with a brass or stainless front. The key and keyway certainly look like a Yale 8 but I could stand corrected on that assumption. Your mention of a Yale #1 blank has me somewhat confused as the only Yale I that I am familiar with is a flat steel blank.

Your piece certainly is intriguing and I would love to get my hands on it for awhile just to see the workmanship involved. Perhaps, as you mention, a reader of *Shop Talk* may have some suggestions on this lock which, of course, is what *Shop Talk* is all about. If you have time to drop us a line I would appreciate knowing if my figures are correct on the size of the case. Many thanks for writing to *Shop Talk* and letting our readers see this unusual piece. If anyone out there has more information, please let us know! 03

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Letters

Continued from page 6

ing the professional field of locksmithing.

I don't have enough information regarding people or members available and interested in this. I don't know either if the idea was worked out before or not. Therefore I'm interested in having an answer on this particular request. If such an idea has not been worked out before, efforts should be made in this direction. It is my suggestion and personal opinion that members and organizations interested should discuss this through your magazine.

Daniel Velez
Puerto Rico

Technitips

Continued from page 12

hole. Last of all one each $\frac{3}{8}$ " hole for a bolt. Put one each $1\frac{1}{2}$ " \times $\frac{1}{4}$ " bolt through largest hole and secure with nut.

Insert all wrenches and key guides through appropriate holes. Take key cutters and lay over large bolt secure with flat washer and nut. There's everything needed to duplicate, cut by code, and adjust. With this set-up you never have to worry about forgetting anything.

Thomas O'Neil
Texas

Airport Security

Continued from page 31

Entrance Controls' Marbut says, "The fact that existing door frames were of many various sizes was not a problem. The Magnalocks could easily be adapted to each particular door." No electrical wiring of the door itself was required. All wiring passes through the door frame and is therefore not exposed.

There are no moving parts to wear out, so the locks should last as long as the doors or the airport...or so expects Rank of PDX protective services: "Looking into the future, the security system should provide the flexibility and ability to expand to meet future security requirements imposed by the FAA and other governmental jurisdictions should further expansions be necessary one day. ■



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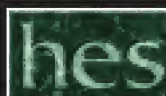
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Mercedes Lock

Continued from page 48

3. Specifically plan which discs you intend to move, and to which location you intend to move them.

When regarding the door lock cylinders, remember that the first four spaces operate the lock itself, while the last four operate the alarm system. If you were to swap discs from the sixth position to the eighth position, the logical purpose would be to prevent the original key from operating the alarm.

When the desired result is to prevent any of the old keys from working, the proper method is to rearrange the split discs in the second, third, and fourth positions in the A plane.

Since by its very design the glove compartment offers minimal security, this lock can be operated by the new key which will also operate the ignition and doors, by rearranging the discs in

spaces 2 and 3 in plane B. To change the trunk as well, swap the two split discs in space 7 and exchange the discs between the ignition and doors in space 7!

Now that we have completed the necessary recombining procedure, we must key a new key for our new combination. Begin by taking a key blank and tightening it securely in the jaws of a 1200CM code machine. When there is a #1 cut in one of the planes and no definite cut in the opposite plane, make a #2 cut in that space. Cut only the first four spaces in both planes. Use another key blank to cut the final four spaces in both planes. When two of the same depth cuts are together remove the tip between the two cuts.

Now using the pattern keys that you have just been making carefully duplicate them onto another key blank using the club or the ten key machine or other machine of this type. The second pattern key can then be used to logically progression the remaining cuts which should only be on the A plane. Remember to use the fifth space to obtain the glove compartment lock cut. The sixth space determines the ignition lock cut. The seventh space determines the trunk lock cut.

A working key can now be made for each individual lock. The sum of all these keys will make a complete working key!

Spacing	Depths
1-.175	1-.305
2-.275	2-.280
3-.375	3-.255
4-.475	4-.230
5-.575	5-.205
6-.675	
7-.775	
8-.875	

Door Closers

Continued from page 55

cutting the holes, however, it is a good plan to note their placement and make certain that the trim you are using will permit this. Von Duprin's own sex bolts (or through bolts) use a 7/32 hole on the inside, and a 13/32 hole from the outside on metal doors, or a 3/8" hole straight through for wood doors.

Now mount the device head and trim to the door. Install the lever arms using new-style axles and slip the crossbar into place. Check its width to be certain that once the hinge stile case is on there will still be a distance of approximately 1 1/4" to the hinge side of the frame for



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clearance.

If the bar is too long, cut it to the desired width using a tubing cutter (yes, a hacksaw will work, but the tubing cutter is faster, easier, and gives more professional looking results). Then drill the hole in the base of the bar for a wedge-tite tenon screw, in line with the hole for one at the other end.

Slip the bar back on, and loosely set the wedge-tite tenon screws in place. Insert the hinge stile lever arm into the hinge stile lock case, if you have not already done so, using a new-style axle, and level the cross-bar. Then, holding it in place, mark the screw holes for the case. Check to be certain that the case will be parallel to the frame using the holes you marked, and then remove the cross-bar and drill the case mounting holes. Re-install the cross-bar, attach the lever arms, and mount the case. Tighten the wedge-tite tenon screws and check the bar for smooth and balanced operation.

Re-check the strike alignment, using shim plates if necessary, and install the strike onto the frame so that the latch center is at the center of the strike, and drill the mounting holes in the center of the opening provided for them, to allow for maximum adjustment of the strike in both directions. Check and tighten all screws, and check the door for proper operation.

Congratulations! The job is now done, and you are ready to install the other 48 panic devices they need on at the new recreation center uptown. Seriously, jobs like this can be highly profitable, often lead to repeat or referral business, and, if you double-check everything as you go, can be fairly simple to do. The constant re-checking is the clue to success. ■

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